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Massachusetts Outdoors!

Volume Two

For Our Common Good

1988-1992

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Massachusetts Outdoors! For Our Common Good

Volume Two - 1988-90 Action Plan and Workbook

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Introduction

For the past eighteen months, the Executive Office of Environmental Affairs, through the Department of Environmental Management's Division of Planning and Development has been preparing this five year, two volume plan addressing open space and outdoor recreation policies and actions. This document presents data from an extensive research project which has inventoried nearly 11,000 open space and outdoor recreation sites, surveyed over 3,500 residents, 351 cities and towns and 175 state facility managers. Statistical information from these surveys will be available to all state and local agencies through the EOEA Data Center. Information outlining the procedure for accessing this data is also included in Volume Two.

Volume Two was developed as a result of the Technical Advisory Committees commitment to present a document that was useable to both state and local planners and managers. The sections in this document were produced as independent planning tools and should be a useful reference for professionals working in the field of open space and outdoor recreation planning and management.

Listed below are a number of abbreviations that will be used throughout Volume Two:

SCORP Statewide Comprehensive Outdoor Recreation Plan

EOEA	Executive Office of Environmental Affairs
MCZM	Massachusetts Coastal Zone Management
MEPA	Massachusetts Environmental Policy Act Unit
DCS	Division of Conservation Services
WRC	Water Resource Commission
DEM	Department of Environmental Management
DFWELE	Department of Fisheries, Wildlife and Environmental Law Enforcement
MDC	Metropolitan District Commission
DFA	Department of Food and Agriculture
DEQE	Department of Environmental Quality Engineering
MWRA	Massachusetts Water Resources Authority
TAC	SCORP Technical Advisory Committee
MHC	Massachusetts Historical Commission
EOCD	Executive Office of Communities and Development
MAPC	Metropolitan Area Planning Council
EOTC	Executive Office of Transportation and Construction
RPA	Regional Planning Agencies
ACEC	Areas of Critical Environmental Concern
DCPO	Department of Capital Planning and Operations
LWCF	Land and Water Conservation Fund
USH	Urban Self-Help
SACOLARP	Secretary's Advisory Committee on Land Acquisition and Recreational Policy

Chapter One - State Action

1988 - 1990 Statewide Comprehensive Open Space and Outdoor Recreation Action Plan

Below is a two year action plan, outlining actions that each agency will take to address the open space and outdoor recreation policies and recommendations presented in Chapter Eight of Volume One.

The policies presented in Volume One were ranked by the SCORP Technical Advisory Committee based on the research and public hearings. The actions presented below were ranked by each EOEA agency as High (H), Medium (M), or Low (L) priority based on the results of the SCORP research and budgetary considerations.

Managing the Public Estate

The people of the Commonwealth have entrusted the efficient and effective management of land in public ownership to various state and local agencies.

Policy 1 - Coordination Among Land Managing and Land-Use Planning Agencies (H)

All agencies and political subdivisions of the Commonwealth having jurisdiction over public lands shall coordinate their work and communicate with land-use planning agencies to reduce costs, avoid duplication and enhance effectiveness.

1. EOEA will work with the agencies and the public to develop and promulgate a sound environmental philosophy to guide agency actions and programs. (H)
2. EOEA will investigate methods for supporting regional planning by hosting a strategic planning meeting with regional planning organization. Agenda items should include enhancing open space and recreational opportunities, protection of the water supply, wetlands protection, etc. (H)
3. The Secretary of the Executive Office of Environmental Affairs will increase efforts to work with the Governor's Development Cabinet to ensure that actions of the other secretariats do not conflict with the policies and programs set forth in this plan. (H)
4. The Secretary will work with other secretariats, MHC, MAPC and other RPAs to prevent encroachment on public lands unless no feasible or prudent alternative can be located. EOEA, in cooperation with MAPC and appropriate agencies, will facilitate a broader discussion to develop a procedure for locating public land for crucial facilities. (H)
5. EOEA will work to establish reciprocal agreements with EOCD, EOTC and other appropriate secretariats to require that local open space plans be current prior to awarding state grants and to encourage other state agencies to review municipal open space plans before proceeding with projects which may adversely affect the open space or outdoor recreation opportunities of a community. (H)
6. EOEA will review other Commonwealth policies and programs, such as: affordable housing; economic development; cleaning up public land; conflicting environmental policies, etc., and propose compromise. (M)
7. EOEA will review the MEPA process and revise it to include open space and other environmental concerns noted in the SCORP report. (H)
8. The EOEA Land Use Coordinator will meet monthly with the Open Space Advisory Committee, having representation from all EOEA agencies, to enhance interagency communication and coordination efforts. The standard agenda will include: acquisition projects, administration and finance (streamlining the acquisition process), land management plans and wetlands and rivers protection. (H)
9. In accordance with agency land acquisition strategies and in consultation with Regional Planning Agencies (RPAs), the Open Space Advisory Committee will consider designating "acquisition areas" which have relevant components for each agency in order to focus cooperative efforts and enhance regional planning efforts. (H)

10. The EOEA Land Use Coordinator will report to the SCORP Technical Advisory Committee (TAC) on an annual basis to provide an update on agency accomplishments and cooperative efforts with respect to SCORP actions. (H)
11. DEM will seek to acquire 10 parcels providing linkage between existing protected lands statewide as outlined in the 1986-1991 Land Acquisition Strategy. (H)
12. The MDC has established and will continue to coordinate a joint effort with DFWELE for watershed land acquisition. (H)
13. The MDC will coordinate interagency cooperation to ensure the protection of the Saugus and Pines River marshes. (H)

Policy 2 - Public-Private Partnership (M)

All agencies and political subdivisions of the Commonwealth shall actively promote communication and coordination among federal, state and local agencies, private nonprofit organizations and the private sector to avoid duplication and enhance effectiveness.

1. EOEA will establish an open space advisory committee of public and private representatives to exchange ideas and develop better coordinated policy. (H)
2. EOEA will work with the Office of Economic Development to find ways to encourage innovation and investment in outdoor recreation. EOEA will explore cooperative ventures with private developers to plan for and include recreation space and outdoor amenities in capital projects, with particular attention to connecting their projects to state and local recreation areas. (H)
3. EOEA will develop incentives to encourage public access to private land. EOEA will review existing statutes, policies, regulations and practices to assure that impediments to providing public recreation on private lands are removed. (H)
4. EOEA agencies will develop guidelines and procedures for enhancing public-private partnerships to assist in meeting agency goals. (H)
5. EOEA agencies will seek ways to actively encourage respect for private property rights and assist in managing private lands used for public recreation. (M)
6. EOEA will sponsor a land stewardship conference for environmentalists, private and public land managers to provide a forum to forge partnerships and develop working relationships. (M)
7. EOEA will consider the feasibility of a grant program, similar to the City of Boston Park Partners, to facilitate partnerships on state owned lands and facilities. (M)
8. When appropriate, DEM, DFWELE and MDC will actively seek private contributions to promote the Commonwealth's recreational facilities to increase the use of the existing resources. (M)
9. DEM, DFWELE and MDC will continue to actively seek partnerships to assist in land management responsibilities and the provision of recreational services. Where appropriate, agencies will consider private recreation investment in public facilities. (L)
10. MDC and DEM will enhance the use of "Friends" groups for forest, parks and reservations. (M)
11. EOEA agencies will continue to work with the private nonprofit agencies to acquire and protect land. (H)
12. EOEA will implement procedures establishing a predictable reimbursement process to facilitate land purchases by non-profits on behalf of the state. (H)

Policy 3 - Management Planning (M)

All agencies and political subdivisions of the Commonwealth shall prepare long-range management plans, with consideration for the physical, natural and cultural resources of all state properties with existing and future facilities.

1. EOEA will initiate an effort to develop standard components to be included in all agency management plans, in order to promote complimentary management planning by EOEA agencies. (H)
2. EOEA will assist agencies in their continuing efforts to get funding for land management planning programs. (H)

3. EOEA land managing agencies will establish guidelines for acreage and types of land to be considered for open space acquisition that are responsive to development pressures and low cost housing concerns. (H)
4. EOEA agencies will develop in-service training and management meetings to address the top issues related to staff and equipment problems and will develop a report for EOEA review. (H)
5. All EOEA agency management plans will be coordinated with relevant federal, state, municipal and private nonprofit agencies. (H)
6. DEM, DFWELE, and MDC will develop timelines for the completion of management plans, based on agency resources. (M)
7. DEM will prepare interpretive plans for all important historical and cultural sites. (H)

Policy 4 - Geographic Information System (GIS) (H)

All agencies and political subdivisions of the Commonwealth shall support the development and maintenance of a comprehensive computerized data base and geographic information system.

1. EOEA will support additional funding necessary to establish GIS capability within appropriate offices and agencies. (H)
2. EOEA will design and develop a management plan for the maintenance and use of the GIS system that will include: a method for promoting its use among all agencies and divisions and a funding plan that provides for agency equipment and training. (H)
3. EOEA will work with MAPC to develop a system that will enable regional planning agencies to access GIS information. (H)
4. EOEA will solicit existing data from all relevant agencies to create comprehensive natural and cultural data layers and will pursue the missing data. (H)
5. EOEA agencies will support automation of the open space data layer and will consider supporting/participating in the development of other critical GIS data layers. Each agency will inventory and recompile, as needed, all department maps and geographic information. (H)
6. Appropriate EOEA agencies will establish a GIS capability, including the procurement of graphic terminals, communications capable of accessing the EOEA Data Center, pen plotters and technical staff. (H)

Urban Recreation

The people of the Commonwealth have entrusted the protection of resources and the provision of recreational opportunities for residents of urban areas to various state and local agencies.

Policy 5 - Acquisition, Development, Restoration, Preservation and Management of Urban Parks (M)

All agencies and political subdivisions of the Commonwealth shall promote the public and private acquisition, development, restoration, preservation, interpretation and management of natural and cultural resources and recreation facilities in urban areas.

1. EOEA will include urban issues on the agenda for the strategic regional planning meeting (see policy 1, action 2). (H)
2. EOEA will consider the development of a technical assistance program to assist municipalities in the conservation and preservation of natural and cultural resources and the provision of outdoor recreation opportunities. (H)

3. EOEA will consider the development of a program of mini-grants to fund innovative programs designed to encourage additional, new, unusual or cooperative (municipal-private sector) park projects to improve management and increase park use. These projects must ensure the commitment of the municipality to ongoing maintenance. Grant funds could also be used for the development of maintenance management plans. (M)
4. MDC will focus expenditures to acquire new open space areas in publicly accessible places, except in areas where acquisition are needed to protect the integrity of water supply lands. (H)
5. DEM and MDC will develop a strategy for acquiring open space and developing recreation facilities in urban areas of the state identified in the SCORP as having the greatest need. (H)
6. DEM will continue to fund City and Town Commons, Olmsted Historic Landscape Preservation, and Heritage State Park Programs and actively promote legislation to re-fund the Bay Circuit Program. (H)
7. DEM will pursue the acquisition of day use sites within a 20 minute drive of urban areas. An important prerequisite will be accessibility to public transportation and the capacity for water-based recreation. (L)

Policy 6 - Accessible Open Space (L)

All agencies and political subdivisions of the Commonwealth shall promote increased accessibility for urban residents to public open space, recreation facilities and natural and cultural resource amenities in suburban and rural areas.

1. EOEA will explore ways to improve public transportation to state recreation facilities and seek funds to formulate a master plan leading to the development of urban and suburban bicycle routes in and around major urban areas. (H)
2. In cooperation with the Division of Tourism, EOEA will review the interstate and state road systems and explore ways to encourage tourists to stop and use state recreational facilities. (M)
3. DEM, DFWELE and MDC will develop and promote multi-cultural programming methods to ensure that all sectors of the population perceive themselves as welcome in programs and facilities. (M)
4. DEM, DFWELE and MDC will review and update publicity, signage and maps to include public transportation information. (H)
5. DEM and MDC will enhance promotional efforts to urban residents, particularly low and moderate income people, immigrants, minorities, and people with disabilities to increase awareness of and access to state and local facilities. Part of this promotional effort will include modes of transportation available, information on accessible areas and bilingual signs. (H)
6. DEM will explore the feasibility of providing signs, at cost, for private land managers working with the state to designate public use and access of private lands. (L)
7. DEM will review the forest and parks internal road systems and make recommendations for changes that would encourage more park use while still protecting sensitive natural and cultural resources. (L)
8. MDC will work to improve public access by providing expanded programs in reservations during both peak and low use periods. (H)
9. MDC will continue working to provide increased access to river corridors in the Metropolitan area through land acquisition and pathway development. (H)

Policy 7 - Controlling Vandalism (M)

All agencies and political subdivisions of the Commonwealth shall support efforts to reduce vandalism by promoting proper maintenance levels, constructive use of parks and recreation areas, and respect for natural and cultural resources.

1. EOEA will pursue the development of a community service type program through the judicial system for offenders of nonviolent crimes to be assigned to park maintenance tasks as part of their sentence. (H)
2. EOEA will support legislation providing funds for vandalism control programs at both the state and local levels. (H)

3. Through regional staff, DCS will make available to cities and towns planning, design and construction techniques that minimize or discourage vandalism. (M)
4. EOEA agencies will add vandalism concerns to their list of criteria for inspection/assessment of state properties and facilities. Agency management plans will include consideration for vandalism concerns and recommendations regarding repairs and rehabilitation. (M)
5. MDC will develop maintenance programs that address vandalism in a timely manner. (H)
6. The MDC, in consultation with other agencies, will develop a "park ethic" through specially designed urban environmental education programs, making this information available to other state and local agencies. (H)
7. MDC will implement an initiative to establish highly visible patrols throughout the Metropolitan Police jurisdiction, in the reservations, on the waterways, and on the roads, capable of being directed to identified service or problem areas. (H)
8. DEM will promote legislation to establish a Park Ranger Program to increase visibility and enforce rules and regulations on DEM managed lands. (H)

Assistance to Cities and Towns

The people of the Commonwealth have entrusted the state to give adequate support to cities and towns for the protection of natural and cultural resources and the provision of outdoor recreation opportunities.

Policy 8 - Technical Assistance (H)

All agencies of the Commonwealth shall provide technical assistance to cities and towns to help with their open space and recreation planning and management.

1. EOEA will pursue funds for the development of a technical assistance (TA) program that would address all 1988 actions calling for technical assistance to state and local agencies. (H)

    a) The new TA program would develop a pilot project in which environmental and recreation professionals from around the state are organized to provide direct technical assistance to state and local officials. (H)
    b) The TA program would provide cities and towns with information on state-of-art maintenance equipment for buildings and grounds, vandalism control designs and techniques and educational information on maintenance standards, marketing, interpretation, enforcement, liability insurance programming for outdoor day care programs, etc. (M)
    c) The TA program would develop guidelines for municipalities to assist them in turning dump sites, former military facilities and other facilities into usable open space areas. (L)
    d) The TA program would consider development of a Green Corps for providing technical assistance staff to communities. This program could provide one staff for every 10 volunteers for a limited time to enhance a communities efforts in management operations. (M)
    e) The TA program would explore a cooperative venture with the University of Massachusetts to establish a Recreation Planning and Design Extension Service similar to the Agricultural Extension Service. (L)
    f) The TA program would develop a system for state and local agencies to access SCORP research data. In cooperation with the Statehouse Library, this program would create a lending library of current technical information including technical manuals and other pertinent resources. (H)

2. EOEA will promote open space and outdoor recreation policies with the Executive Office of Communities and Development, regional planning agencies, the Center for Rural Massachusetts and Cooperative Extension, municipalities and developers. (H)
3. EOEA will research and promote methods by which cities and towns can mandate that open space and recreation resources can be provided as part of private development projects. (H)

4. EOEA will review the liability insurance issue and its impact on communities in the Commonwealth, and recommend a course of action to mitigate the negative impacts. (H)
5. EOEA will support legislation that will enhance a community's ability to hire additional Conservation Commission staff, enabling them to address other resource conservation issues in addition to wetlands protection. (M)
6. DCS will continue to assist cities and towns in the development of open space plans which would allow them to qualify for federal and state grant programs. (H)
7. MDC will sponsor workshops to encourage communities to exchange ideas and techniques for the protection of the environment and the provision of outdoor recreation opportunities. (M)
8. MDC will promote public access to the Commonwealth's tidelands and encourage communities to pursue funding to provide access. (M)
9. MDC will provide technical assistance to citizens groups and municipalities in the protection of watershed resources. (H)
10. DFWELE will continue to provide support to citizen groups for the protection of rivers and improvement of fisheries and wildlife habitat. (H)

Policy 9 - Funding Assistance to Cities and Towns (H)

All agencies of the Commonwealth shall provide expanded funding assistance to cities and towns for open space and recreation capital needs.

1. EOEA will support legislation to increase funding assistance for land acquisition, especially in high growth communities, communities seeking to protect the water supply, and in communities seeking to increase recreation opportunities for swimming, biking, hiking and region specific needs. (H)
2. EOEA agencies and offices will evaluate grant program point systems and amend them to give consideration to communities with higher growth rates to protect threatened natural and cultural resources. (H)
3. DCS, in consultation with its advisory committees, will administer funding assistance to cities and towns through the Self-Help Program providing community grants for land acquisition and long-range planning. (H)
4. DCS will administer the Urban Self-Help Program providing grants for land acquisition and development to urban areas. (H)
5. DCS will administer the newly created SURF and SAVE program providing for studies and preparation of plans for the purchase of land and the provision of recreational facilities in urban areas. (M)
6. MCZM will administer the Public Wharfs Repairs and Improvements program, providing grants to local communities. (H)
7. DEM will administer the City and Town Commons Program providing grants to local communities to restore cultural amenities. (H)
8. DEM will administer the Rivers Program providing money to local groups dedicated to the protection and enhancement of rivers. (H)
9. DEM will administer community grants for Lighthouse Preservation.(M)
10. DEM will administer the Olmsted Park preservation grants helping communities preserve historic public parks and maintain open space for recreational use. The program will also provide technical assistance for preventative long-term maintenance programs. (H)
11. DEQE will provide reimbursements to communities for the purchase of land and reservoirs designated as crucial for the protection of public drinking water supplies derived from ground water, through the Aquifer Land Acquisition Program. (H)
12. DFA, through the Agricultural Preservation Restriction Program (APR), will help communities protect agricultural resources and revitalize the farm economy through the purchase of development rights. (H)
13. DFWELE will assist communities with the purchase of open space through its land acquisition program and provide grants for river protection through its Riverways Program. (H)

Policy 10 - Maintenance Programs (H)

All agencies of the Commonwealth shall assist cities and towns in the development of efficient maintenance programs for conservation, parks and recreation areas.

1. EOEA will support legislation which would fund an incentive maintenance program which addresses vandalism and park ethics. (H)
2. EOEA agencies will enhance communication with local parks and recreation professionals, sharing information about current trends and techniques for developing efficient and effective maintenance programs. (H)
3. DFWELE, MDC, and DEM will take the lead in identifying solutions to the management of off-road vehicles and offer technical assistance to cities and towns, especially in rural areas. (H)
4. EOEA will explore the feasibility of an Outdoor Corps, to provide jobs to youth in the Commonwealth and focus on park maintenance at the municipal level. (H)
5. DEM, MDC, and DFWELE will provide technical assistance to cities and towns on maintenance equipment and technique. (M)
6. DEM, DFWELE and MDC will promote academic programs in park, forestry, landscape science and management at various educational institutions. (L)
7. DEM, DFWELE and MDC will work with the Cooperative Extension Service to develop and implement training programs for effective park maintenance to state and municipal park personnel. (M)

Natural Resource Conservation

The people of the Commonwealth have entrusted the protection and preservation of all significant natural resources to various state and local agencies.

Policy 11 - Environmental Law and Enforcement (H)

All agencies and political subdivisions of the Commonwealth shall seek to strengthen and strictly enforce environmental laws, regulations and policies. Outdoor recreation should be explicitly recognized as a beneficiary of clean air, clean water, scenic landscapes, waste free land, and abundant and diverse wildlife.

1. EOEA will seek the passage legislation to protect surface drinking water supplies from direct discharge of contaminants such as road wastes, including a large setback for all development causing non-point runoff. (H)
2. EOEA will study the effects of and, where appropriate, promote the passage of the following: the Land Bank Bill; legislation legitimizing building moratoria; an amendment guaranteeing continuance of affordable housing; amendment to state Title 5 to enhance the protection of the drinking water supply; revision of the zoning act removing the exemption for subdivision plans; legislation allowing the state to veto large scale and dangerous uses of aquifer lands; and liability reform that would provide relief for municipal recreation and would encourage public use of private land. (H)
3. DEQE, DEM, MDC, DFWELE, DFA will evaluate the enforcement of current laws and, if necessary, seek funding to enhance the states effectiveness in protecting recreational, natural and cultural opportunities. (H)
4. DFWELE increase interagency coordination efforts to enhance enforcement activities to reduce vandalism and disregard for the natural and cultural environment. (H)
5. MDC will hire a MEPA coordinator to ensure a thorough review of proposals in areas adjacent to MDC properties. (H)
6. MDC Police will seek to increase staff to focus on environmental law enforcement efforts along the agency's waterways, beaches, watershed areas, the Quabbin Reservoir and the harbor islands. (M)
7. DEM will maintain its park police force and mounted unit and seek funding to expand the police force. (M)

Policy 12 - Coastal Areas (H)

All agencies and political subdivisions of the Commonwealth shall practice and promote the protection of coastal areas and shall strive to make the ocean shoreline and appropriate immediate environs available, accessible, and suitable for use and enjoyment by the public.

1. EOEA will increase efforts to provide access to the shoreline, through legislation, acquisition, pollution control, rehabilitation of coastal facilities and the Waterways License and Permit Program (Chapter 91). (H)
2. EOEA and its agencies will inventory shellfish beds and public beach closings due to pollutants or inappropriate use and develop plans for their restoration. (H)
3. EOEA will encourage municipalities to identify Areas of Critical Environmental Concern, adopting stringent guidelines for development in those areas. (H)
4. EOEA agencies will administer programs authorized under the current open space bond to preserve coastal amenities and provide for coastal recreation opportunities. (H)
5. EOEA agencies will actively pursue cooperative agreements to make coastal properties accessible through private landowner easements or other voluntary arrangements. (H)
6. MCZM, in cooperation with DEM, will explore the feasibility of adopting more stringent state limitations on development within the 100 year floodplain, especially in high hazard (V) zones. (M)
7. MCZM will encourage coastal communities to prepare harbor management plans which consider preservation and the provision of outdoor recreation opportunities. (H)
8. MCZM, in cooperation with DEM, will institute a state program to acquire flood damaged properties to supplement the current FEMA acquisition program, with an emphasis on barrier beach properties, as per Executive Order Number 181. (M)
9. MCZM, DEM and DEQE will work cooperatively to develop performance standards for lands subject to coastal storm flowage. Currently, the DEQE Wetlands Protection Regulations (310 CMR 10) have no regulations guiding work within these lands. (H)
10. All EOEA agencies will promote the 27 policies set forth by the Massachusetts Coastal Zone Management Program. (H)
11. All EOEA agencies will carry out the Action Plan set forth in the Massachusetts Wetlands Component of the 1988 SCORP. (H)
12. DEQE will actively encourage the participation of state and local officials in the licensing of waterfront projects under M.G.L. Chapter 91, in order to ensure that adequate and appropriate water-related benefits are provided and maintained for the public. (H)
13. DEQE will promulgate waterways regulations that specify access-related standards for non-water-dependent projects on Commonwealth tidelands, including minimum requirements for exterior open space and pedestrian circulation, dedication of interior space to facilities of public accommodation and the enhancement of view corridors and other visual amenities, enhancement of water-dependent uses, elimination of displacement of water-dependent uses. (H)
14. Under the Public Access Program, DFWELE will rehabilitate, develop and acquire land to enhance boat launch facilities and coordinate with state and local agencies to minimize the impacts of motor access. (H)
15. DEM will protect coastal areas for conservation, public health, storm damage, historical and cultural protection and to increase recreational opportunities through the Coastal Acquisition Program, Lighthouse Preservation Program, Coastal Facilities Rehabilitation Program and the Boston Harbor Islands Program. (H)
16. DEM will seek acquisition of 500 additional acres of saltwater coastline by 1991. (H)
17. In addition to acquisition, DEM will identify coastal areas that could be made accessible to the public by state involvement, private landowner easements or other voluntary arrangements and aggressively move to open up these areas. (H)
18. DEM's Division of Water Resources will assist coastal communities in developing local floodplain by-laws to help safeguard the public from threats posed by coastal flooding. (H)
19. MDC will enhance coastal opportunities by implementing a program to rehabilitate Revere Beach and further develop and rehabilitate Boston Harbor Island facilities. (H)

20. MDC will promote educational activities to increase public awareness and support for coastal resources. (H)
21. MDC will work toward completion of the Dorchester Bay Waterfront Park, which will include construction of the eight mile MDC/DPW bike path and design of Neponset Estuary Park. (H)
22. MDC will seek funding to expand and further protect the Belle Isle Marsh Reservation. (H)

Policy 13 - Natural Habitats (M)

All agencies and political subdivisions of the Commonwealth shall practice and promote the protection of wildlife and wild plants to preserve the diversity and health of natural ecosystems. Special emphasis shall be given to the preservation and recovery of rare and endangered species and threatened ecosystems.

1. EOEA will identify and designate additional Areas of Critical Environmental Concern (ACEC) throughout the state. (H)
2. EOEA will draft and secure passage of the Rare and Endangered Species Protection Statute and seek additional funding for research initiatives and acquisitions related to the protection of rare and endangered species. (H)
3. EOEA will support research toward the nomination and designation of Representative Natural Areas (RNA's) in order to preserve and protect old growth woodlands and successional diversity. (H)
4. All EOEA land managing agencies will review management policies on public lands to ensure consistency with natural diversity goals including the protection of threatened species and ecosystem types, implementing needed change. (H)
5. DFWELE and DEM will work cooperatively to protect at least two additional representative, viable examples of sites harboring plants, animals or natural communities which are globally threatened and for which Massachusetts has a special responsibility to ensure protection because of rarity or global threat. (H)
6. DFWELE will seek to protect at least 30% of the sites listed as harboring plants, animals or natural communities of statewide significance in cooperation with other state, local and nonprofit land acquisition programs. (H)
7. DFWELE will pursue funding to acquire abandoned farmlands and manage brushy fields, to acquire fresh water marshes and surrounding upland, to preserve these resources for wildlife habitat. (H)
8. DFWELE will seek to strengthen the existing inventory of the Natural Heritage Endangered Species Program (NHES) by providing additional scientific staff to increase the program's research, field inventory and mapping capability. (H)
9. MDC will explore the development of an Urban Wilds program for MDC properties. (M)
10. MDC will promote acquisition of large land holdings to increase species habitat. (H)
11. MDC will pursue a new research initiative, "Opportunity and Impact Management," to promote increased stewardship and resource protection on MDC properties. (H)
12. MDC will develop a plan of action to reduce the impact of deer upon habitats in the Quabbin Watershed. (M)
13. MDC will establish long-term habitat management goals for watershed lands and coordinate these goals with active forest management to maximize habitat diversity. (H)
14. MDC will develop natural resource management plans for Wachusett and Sudbury watershed lands which incorporate watershed protection, forest management and enhancement of wildlife habitat. (H)
15. DEM will seek to designate at least five areas statewide as representative natural communities. (H)
16. Through the GOALS (Guidelines for Operations And Land Stewardship) Program, DEM will include consideration for maintaining and creating diverse vegetative areas to encourage wildlife habitat. (H)

Policy 14 - Forest Resources (M)

All agencies and political subdivisions of the Commonwealth shall practice and promote responsible public and private forest management.

1. EOEA will initiate promotional efforts that encourage private forest managers to prepare management plans that will preserve and protect significant resources. (H)
2. EOEA land managing agencies will prepare forest management plans that promote the preservation and protection of areas with significant environmental values, such as: wildlife habitat, aesthetics, wood products, recreation and cultural resources. (H)
3. DEM will consider the discontinuation of timber quotas but continue the practice of active forest management including harvesting on a sustained-yield basis. (M)
4. DEM will promote low impact logging practices in sensitive areas using equipment and techniques that will minimize damage to the residual forest lands. (H)
5. MDC will manage watersheds for moderate water yield increases, consistent with the goal of increasing forest health and habitat diversity. (H)
6. MDC will develop a better inventory system for urban forest land. (H)
7. MDC will develop a model for assessing risk and logging difficulty in order to minimize impacts from private logging operations. (H)

Policy 15 - Water Resources (H)

All agencies and political subdivisions of the Commonwealth shall practice and promote the protection, restoration, preservation and management of aquifers, rivers, lakes, ponds, wetlands and their watersheds.

1. EOEA will identify all critical watershed lands and protect 30% of the most critical by seeking funds to expand all water-related agency programs and water-related grant programs. Special consideration will be given to the Aquifer Land Acquisition Program. (H)
2. EOEA will evaluate law enforcement programs in the area of water pollution and develop strategies to address areas of critical need. (H)
3. EOEA will evaluate the effectiveness of protective orders on rivers and develop strategies to increase efforts to protect riparian lands from poorly planned development. (H)
4. EOEA will promote the acceptance of a bill filed with the Legislature that will amend Section 104 of Chapter 92 of the General Laws, that will clarify and update existing zoning and protection tools, related to aquifer and wetlands, for both local and state governing bodies. (H)
5. EOEA will research tax incentives for farm owners and industry for the protection of wetland resources. (H)
6. DCS will continue to review the open space planning process for funding assistance, to assure consideration for the protection of water resources, particularly riparian corridors, aquifers and wetlands. (H)
7. EOEA agencies will increase efforts to use the Geographic Information System to enhance water resource planning and protection efforts and promote its existence to cities and towns, encouraging them to use the system in their planning efforts. (H)
8. EOEA agencies will evaluate current water-related programs, implement change, seek funds to enhance effectiveness and create new programs that will increase efforts to protect the resource and provide water-related recreation opportunities. (H)
9. EOEA agencies will incorporate a watershed component into their environmental education programs to heighten public awareness of the impact of land use change on water quality. (H)
10. DEM, DFWELE and MDC will explore the feasibility of developing a 2000 by 2000 program as recommended by the President's Commission."Through state leadership encourage local initiative to clean up and revitalize their stream corridors, with the goal of one river or stream per county by the year 2000." The national goal is 2000 counties by the year 2000. (M)

11. DEM's Flood Hazard Management Program will work with FEMA to refine the National Flood Insurance Program standards in "fringe areas". EOEA and DEM will promote application of Executive Order #149 which prohibits state funded development within 100 year floodplains unless feasible alternatives are not available. The department will review and promote "natural valley storage" in lieu of floodplain development. (H)
12. DEM, in cooperation with other agencies will map, plan, prioritize and seek to protect existing and future water sources. (H)
13. DEM will seek to protect 200 acres of wetlands and river resources statewide and two other water resource sites in Eastern Massachusetts by 1991. (M)
14. DEM will develop water resource management plans for each of the twenty-seven river basins of the Commonwealth to ensure that water is available in sufficient quantity and quality to meet current and future consumptive and non-consumptive needs. (H)
15. DEM will develop minimum streamflow guidelines for the protection of current and future water uses, including water supply, energy, agriculture, recreation, fisheries and wildlife. (H)
16. DEM will visit Massachusetts' municipalities to evaluate their compliance with the requirements of the National Flood Insurance Program and state wetlands regulations, including but not limited to the Massachusetts Wetlands Protection Regulations and the State Building Code, Section 744. (M)
17. DEM will offer workshops to municipal officials to explain the requirements of federal, state, and local regulations in effected floodplain areas. (H)
18. DEM will seek a staff position to provide technical assistance to communities to implement water resource management plans. (H)
19. DEQE will consider a set of permanent regulations forbidding certain uses within 1/2 mile of a wellhead unless aquifer mapping has been done. (H)
20. DEQE will review the "Title 5" regulations for septic systems for possible revisions, regarding current knowledge of the transmission of viral diseases and the influence of nitrates on drinking water. (H)
21. DEQE will review State Wetlands Protection Act regulations to clarify and tighten regulations and increase enforcement efforts to prevent alteration of wetlands. (H)
22. DEQE will maintain its training program for Conservation Commissions regarding the Wetlands Protection Act and enhance the program by committing additional staff and resources.(H)
23. DFWELE, in cooperation with other agencies, will prepare a State Wetlands Priority Plan for Massachusetts that will identify wetlands that should receive priority attention for state acquisition.
24. DFWELE will seek to protect 200 miles of major river and cold water stream corridors by 1991. (H)
25. MDC will work with DEM, DFWELE and Nashua River Watershed Association to protect the Stillwater River's water quality and to conserve the river's resources. (H)
26. MDC will continue to assist communities in establishing measures to protect wetlands linked to the drinking water supply. (H)
27. By 1990, the MDC and DFWELE will identify and acquire key watershed parcels with a $30 million appropriation. (H)
28. MDC will continue to study the Wachusett Reservoir with respect to taste and odor-causing algal blooms and continue to investigate reservoir pollution and algal nutrients. (H)
29. MDC will develop a better monitoring program for encroachments and violations associated with water resources under their jurisdiction. This program will include the use of the GIS and an increase in land survey and environmental monitoring staff. (M)
30. MDC will continue work on numerous urban flood control projects to reduce the surcharge of sewage flowing onto streets and residential properties. (H)
31. MDC will continue its water quality monitoring and testing program on all of its public beaches. (H)
32. MDC will complete the construction of fish ladders at each of the twelve dams located on the Charles River between the Boston Harbor and South Natick Dam. (H)
33. MDC will undertake the Lower Mystic Lake restoration project to remove saltwater from the lake bottom and reoxygenate the lower lake. (H)
34. MDC will implement an education program for visitors of watershed land which emphasizes watershed stewardship and protection. (M)

Policy 16 - Agricultural Lands (M)

All agencies and political subdivisions of the Commonwealth shall practice and promote the protection of prime agricultural soils and farmland.

1. DFA will seek additional funding for the Agricultural Preservation Restriction (APR) and Farmland Stewardship Programs. (H)
2. EOEA will explore further tax incentive abatements for Massachusetts agricultural production. (H)
3. The Soil Conservation Service, in cooperation with the Conservation Districts will complete the Soil Survey for Massachusetts in FY '89. (H)
4. DFA will explore the concept of amending Chapter 61A and 61B to assist communities in exercising their options to purchase. (H)
5. DFA will continue the mapping of farmland under the municipal farmland identification program. (M)
6. DFA will provide identification and technical assistance to communities seeking to protect agricultural lands. (H)
7. DFA will assist in the formation and support of grower cooperatives which provide for better distribution of scarce agricultural resources. (H)
8. Through the APR program, DFA will work to protect an additional 35,000 acres of farmland by 1995. (H)
9. Through the Farmland Stewardship Program, DFA will seek to lease another 1000 acres of state owned farmland to persons entering into or expanding their agricultural operations by 1993. (H)
10. MDC, DEM and DFA will develop further strategies to enhance the effectiveness of a program permitting compatible agricultural uses on agency managed lands. (H)
11. MDC will continue to explore expansion alternatives for its urban gardens program. (M)
12. MDC will explore protection alternatives for urban farms that enhance park system holdings and the urban landscape. (L)
13. MDC will develop education programs and management strategies for farmland on MDC properties. (M)
14. DFWELE and MDC will work with DFA on safe farming practices on farm lands along rivers to prevent erosion or pollution by pesticides or fertilizers. (M)

Policy 17 - Geological Resources (L)

All agencies and political subdivisions of the Commonwealth shall practice and promote the protection of significant geological resources.

1. EOEA will seek to designate special landforms as Areas of Critical Environmental Concern. (L)
2. EOEA will explore legislation to restrict construction and development in areas of rare or unusual geological features. (M)
3. EOEA will develop an informational brochure for towns detailing appropriate controls for sand and gravel excavation. (H)
4. EOEA agencies will develop strategies within their land acquisition programs that will consider the protection of significant geological features. (H)
5. DFWELE will inventory significant geological resources and develop a strategy for protection and acquisition of these sites in cooperation with other land managing agencies. This inventory will be incorporated in the state Geographical Information System. (H)
6. MDC will explore the development of an urban geology education program and include geological information on future interpretive signs. (M)
7. MDC will pursue the acquisition of significant geologic sites that would also enhance the existing park system. (L)
8. MDC will include in its watershed aquifer acquisition program consideration for significant gravel deposits currently threatened by excavation. (H)
9. MDC will work with watershed communities to adopt strict regulations regarding sand and gravel excavation. (H)

Cultural Resource Preservation

The people of the Commonwealth have entrusted the protection of all significant cultural and historical resources and their interpretation to various state and local agencies.

Policy 18 - Archaeological Resources (M)

All agencies and political divisions of the Commonwealth shall practice and promote the identification and protection of significant prehistoric and historic archaeological resources.

1. EOEA will evaluate agency cultural programs and current funding levels, identify program needs, recommend change, and identify areas for increased agency cooperation. (H)
2. EOEA will consider the establishment of an Office of Cultural Resources to coordinate all EOEA agency activity and work with other secretariats to protect and enhance state resources. (H)
3. EOEA will initiate a meeting with the Executive Office of Communities and Development to develop strategies to further enhance municipal planning and subdivision legislation to include increased consideration for significant cultural resources. (H)
4. EOEA will promote the protection of all significant archaeological resources with other secretariats in compliance with M.G.L. c. 9, s. 26, related to the Massachusetts Historical Commission and M.G.L. c. 9, s. 27 related to historic or archaeological landmarks. (H)
5. MDC, DFWELE and DEM, in cooperation with the MHC, will seek funding to develop master plans to inventory (in cooperation with the statewide GIS), evaluate and protect all significant archaeological sites in state forests, parks and reservations. (H)
6. EOEA agencies in cooperation with the state GIS, will seek funding to inventory significant cultural resources on all state owned land and develop a management/maintenance program to assure the protection and enhancement of those resources. (H)
7. MDC and DEM will work closely with MHC and local historical commissions to protect archaeological resources and designate new historic areas as appropriate. (H)
8. DEM will seek to protect, through interagency cooperation or acquisition, five archaeological sites statewide by 1991. (L)
9. DEM will implement policies and procedures which formalize consideration for management, protection and enhancement of archaeological resources in the implementation of its acquisition, planning, development and management projects in state forest, parks and reservations. (H)
10. MDC will develop a comprehensive Cultural Resource Management Program that defines standard guidelines and procedures for protecting and managing cultural resources on properties. (H)

Policy 19 - Landscape Features (M)

All agencies and political subdivisions of the Commonwealth shall practice and promote the protection of significant scenic and cultural landscape features as designated in the Massachusetts Landscape Inventory.

1. EOEA will seek legislation and funding to begin the preservation of already identified, significant landscapes. (H)
2. EOEA will encourage coordination among state agencies to promote the protection of all significant scenic and cultural landscapes. (M)
3. EOEA will work with EOCD to enhance Municipal Planning and Subdivision Legislation to include consideration for significant landscape features. (H)
4. EOEA will coordinate state agency activity to identify significant agricultural landscapes and to develop guidelines for their evaluation and protection. (L)
5. As part of the funding assistance process, DCS will encourage the planting of native species for new or renovated park projects. (M)

6. All EOEA land managing agencies will increase cooperative efforts with DPW to protect scenic vistas along highways. (H)
7. DFWELE and DEM will identify and protect through acquisition or easements culturally significant areas along rivers. (M)
8. DFWELE, DEM and MDC will seek funding to hire additional landscape architects to implement landscape/scenic vista programs. (M)
9. DEM will seek funding to reprint and distribute the Massachusetts Landscape Inventory. (L)
10. DEM will work cooperatively with MHC to develop and implement a strategy for protection of all significant landscape resources identified both in the Massachusetts Landscape Inventory and in the Historic Assets of the Commonwealth publication. (M)
11. DEM in cooperation with MHC will provide technical assistance to cities and towns for the protection of scenic roads. (H)
12. DEM will seek funding to develop a program to protect historic and scenic landscapes statewide. (M)
13. MDC will promote the protection of view corridors and significant landscape features within Route 128. (M)
14. MDC will implement a program to increase public awareness of the value of the historic/cultural resources on its properties. (H)

Policy 20 - Architectural Resources (L)

All agencies and political subdivisions of the Commonwealth shall practice and promote the protection of historically significant buildings, structures and sites. This includes, but is not limited to: residential, institutional, commercial and industrial buildings, associated outbuildings and structures.

1. EOEA, in cooperation with other secretariats, will promote the protection of all significant buildings and structures threatened as a result of state activity. (H)
2. EOEA will work with EOCD to enhance Municipal Planning and Subdivision Legislation to include consideration for significant buildings and structures. (H)
3. EOEA will seek funding to complete an inventory of all significant buildings and structures on publicly-owned land, and in cooperation with the MHC, will devise and appropriate evaluation and protection strategy. (H)
4. EOEA will form an interagency committee to establish standards for the rehabilitation of any state owned historic buildings, structures or sites in conformance with the Secretary of the Interior's standards for rehabilitation. (M)
5. DEM and MDC will cooperate with the MHC in stabilizing, preserving, and devising appropriate treatments for significant DEM and MDC buildings and structures. (M)
6. MDC will develop, as part of its Cultural Resource Management Program, guidelines for the appropriate use and treatment of historic structures and buildings on MDC properties. (H)

Recreation Resource Protection and Use

The people of the Commonwealth have entrusted the protection of and appropriate public access to natural, cultural and recreational resources, to various state and local agencies. This includes the acquisition of land; renovation, replacement or development of needed recreational facilities; and the provision of programs and services.

Policy 21 - Recreational Properties and Facilities (H)

All agencies and political subdivisions of the Commonwealth shall practice and promote the protection and appropriate public use of natural, cultural and recreational resources and a shall provide for the renovation, replacement or development of properties and facilities necessary to ensure a safe and enjoyable educational and recreational experience.

1. Through the Open Project Selection System, DCS will encourage communities to plan and develop areas that support water and trail related recreation activities. (H)
2. Through the Open Space Planning Process, DCS will encourage communities to seek technical assistance from the Soil and Water Conservation Districts to plan and protect water resources. (H)
3. EOEA agencies will develop strategies to increase efforts, in various minority communities, to promote the use of state-owned recreation facilities. (H)
4. EOEA agencies will increase efforts to develop or rehabilitate properties and facilities that support the following outdoor activities: swimming and other water-related activities, hiking and other trail activities, skiing, bicycling and camping. (H)
5. DFWELE, MDC and DEM will continue to plan and budget for a systematic renovation and replacement of existing recreation facilities, including adaptation for people with disabilities. (H)
6. DEM and MDC will continue to develop and rehabilitate recreation facilities in the Boston Harbor Islands and work with the City of Boston to provide further recreational opportunities on the Islands owned by the city. (H)
7. DEM will coordinate with MDC to ensure the protection of watershed resources when developing or expanding recreation sites in MDC watersheds. (H)
8. DEM will strengthen its Rivers Program by increasing staff assistance to cities and towns for the planning and protection of key parcels. (H)
9. DEM will assist communities in identifying and developing appropriate recreation sites along rivers, particularly in urban areas. (H)
10. DEM will continue to implement the 1986-1991 Land Acquisition Strategy which calls for performance targets to protect resources for water-based, trail-based, and day-use (near urban areas) recreational activities. (H)
11. DEM will enhance efforts to consolidate sections of long distance trails on private lands that are threatened by closure and work to upgrade existing forest and park trails. (H)
12. DEM will concentrate trail protection efforts on the Metacomet-Monadnock Trail through the Connecticut River Valley, the Midstate Trail through Worcester County and the Warner Trail through Norfolk County. Additional planning efforts will involve the protection of the Taconic Trail series in Western Massachusetts and acquisitions adjacent to the Appalachian Trail. (H)
13. DEM will prioritize road improvements at major recreation sites, to provide wide lanes or paved shoulders where traffic is heavy to improve traffic flow and pedestrian and bicyclist safety. (M)
14. DEM will work with the Bicycle Advisory Board to coordinate bicycle projects with all state agencies and seek funding for an interagency bicycle office. This office would develop policies and actions for statewide bike trails, facility maintenance standards and develop and distribute rules and regulations for safe bicycling. (M)
15. DEM, in cooperation with private interest, will conduct a feasibility study for the funding and development of a velodrome/bicycle track for statewide recreational and competitive use. (M)
16. DEM will seek funding to develop a bike route in western Massachusetts that would connect with bike routes in Vermont and New Hampshire. (L)

17. DEM will seek funding to develop and rehabilitate facilities for camping, cross country skiing and picnicking in areas not sufficiently serviced by the private sector. (M)
18. DEM will investigate the advisability of adding exercise courses to existing facilities. (M)
19. DEM will investigate various types of playground design and equipment to enhance existing facilities and install three by 1991. (M)
20. DEM will seek to acquire two ocean beaches, two inland swimming sites, and four public access sites by 1991. (H)
21. DEM will evaluate existing pools and rinks making recommendations for the expansion of existing facilities or development of new ones. (H)
22. MDC will use 1987 Open Space Bond funds to protect rivers and streams and provide water-related recreation opportunities. (H)
23. MDC and DPW will work jointly to construct a bikeway along the Dorchester Shores Reservation and prepare a bike map displaying a route from Dorchester shores to the Blue Hills Reservation. (H)
24. MDC will continue to work with Boston Parks and Recreation to develop a bike path along the Olmsted Emerald Necklace. (M)
25. MDC will seek funds to upgrade its three 18 hole golf courses and the Blue Hill Ski Area. (H)
26. MDC will begin the rehabilitation of the Hatch Shell by 1990. (H)
27. MDC will develop an agreement to allow for the construction of the Harry McDonough Boathouse in Pleasant Bay, South Boston. (H)

Policy 22 - Recreational Programs and Services (H)

All agencies and political subdivisions of the Commonwealth shall practice and promote the stewardship of appropriate natural and cultural resources through the provision of recreational programs and services.

1. EOEA will explore legislation to limit the financial liability of municipally owned and operated recreational facilities and private land owners who allow public access. (H)
2. EOEA will seek funding to support a statewide risk management program to reduce state liability by providing training and guidance to agency staff. (M)
3. EOEA agencies will seek additional funds to expand programs and services for water-related recreational facilities. (H)
4. EOEA agencies will work closely with bicycle organizations to increase recreational opportunities for cyclist. (H)
5. DFWELE, MDC and DEM will enhance opportunities for individuals and private user groups and organizations that benefit from public recreation facilities, to volunteer labor and dollars to help maintain and repair facilities. (M)
6. DEM will seek legislation and funding to formalize Interpretive Services with the Division of Forest and Parks. (H)
7. DEM will complete a master plan for the Bureau of Interpretive Services to provide interpretive programming for natural and cultural resources at appropriate facilities. (M)
8. DEM will seek to hire a water recreation specialist to concentrate on the development of water-related recreational opportunities. (L)
9. DEM will work with EOTC to develop a stable source of funding for printing the statewide bike map. (H)
10. DEM will consider the feasibility of setting aside primitive campsites at state parks for hikers and cyclist, at reduced rates, to encourage bicycle tourism in the state. (M)
11. DEM and MDC will work with bicyclists' organizations, the Bicycle Advisory Board and the Statewide Trails Committee to develop a policy for off-road bicycle use on state lands. (H)
12. DEM and MDC will seek funding for recreation programs and services for: water-based and trail-based activities; activities for people with disabilities; and interpretive programs.(H)
13. DEM and MDC will seek ways to encourage low cost access to facilities that tend to be high cost if privately provided, such as golf, skiing, tennis, etc. (H)

14. MDC will hire a water recreation specialist to increase programmatic options in water-related activities. (M)
15. MDC will continue to expand its interpretive programs and management presence throughout its reservations. (H)
16. MDC will initiate a program called "Ice Plus" to increase available public skating opportunities. (H)
17. MDC will expand its health enhancement program and fitness testing, in particular within the Police Division. (M)
18. MDC will seek to establish a private management arrangement to help upgrade its Mystic River sailing program. (M)
19. MDC will explore the potential use of MDC recreation facilities for after school recreation/sports programs. (H)
20. MDC will implement a "Playgrounds in Motion" initiative, which will increase recreation programming in urban areas. (H)

Access for People with Disabilities

The people of the Commonwealth have entrusted various state and local agencies with the responsibility of providing access to diverse recreation opportunities for people with disabilities.

Policy 23 - Elimination of Barriers (H)

All agencies and political subdivisions of the Commonwealth shall plan and provide for physical and programmatic access to recreation opportunities.

1. DEM, DFWELE and MDC will hire or designate an Access Coordinator to attend to the policies and actions presented in the 1988 SCORP and seek funding to develop a master plan for facility access improvement. (H)
2. DEM, DFWELE and MDC will establish advisory committees of people with disabilities, to evaluate and recommend facility and program access improvements and assist in prioritizing actions. (H)
3. EOEA will seek funding to establish a clearinghouse for information on accessible recreation facilities and programs and develop methods for distributing this information. (H)
4. DEM, DFWELE, MDC will work with the State Architectural Access Board to review, revise and expand state standards for outdoor recreation facility accessibility. (H)
5. DCS will coordinate with the State Office of Handicapped Affairs to assist cities and towns in the completion of their Chapter 504 parks and recreation self-evaluation. (M)
6. EOEA will work with state and regional planning and transportation agencies to improve transportation to park facilities. (H)
7. DEM, DFWELE and MDC will inventory facilities and sites to identify surface materials, degree of slopes, distances and other barriers which may impede use by people with disabilities. (H)
8. DEM, DFWELE and MDC will evaluate programs and services (including transportation services) for access and nondiscrimination. (H)
9. DEM, DFWELE and MDC will develop methods for distributing information about recreation opportunities, including transportation services to facilities, to people with disabilities. (H)
10. DEM, DFWELE and MDC will utilize the Access Improvement Workbook developed by DCPO to enhance and provide access to facilities. (M)
11. DEM will install TDD devices and provide training to staff in each of the five DEM regions, heritage parks, three visitor centers and the Boston office and include the phone numbers with all Forest and Parks information releases. (H)
12. MDC will hire a Therapeutic Recreation Specialist to help expand programs and services for people with disabilities. (H)

Policy 24 - Staff Awareness (M)

All agencies and political subdivisions of the Commonwealth shall train all state park and recreation personnel to understand the capabilities and limitations of people with disabilities.

1. EOEA and its agencies will develop and implement strategies for hiring more people with disabilities. (H)
2. EOEA agencies will develop annual training programs for park and recreation personnel that will increase sensitivity and awareness toward people with disabilities and present current information and issues affecting special populations. Municipal and nonprofit organizations will be invited to participate. (H)

Public Awareness

The people of the Commonwealth have entrusted various state and local agencies with the responsibility to ensure that the residents of Massachusetts are well informed about recreational opportunities and natural and cultural resource protection issues.

Policy 25 - Public Information (H)

All agencies and political subdivisions of the Commonwealth shall increase the public's awareness of and appreciation for its natural cultural, and recreational resources.

1. EOEA will seek funding for a high quality quarterly environmental magazine that would inform the public of EOEA activities and promote the mandate of the agencies. (H)
2. EOEA will publish an annual report on the State of the Outdoors that describes the condition of our natural and cultural resources. (M)
3. EOEA will seek a stable funding source for the provision of agency informational literature so that a constant supply is available to the public. (H)
4. EOEA agencies will implement actions related to information dissemination to people with disabilities.This will be accomplished in coordination with other state agencies that publicize to special populations on a regular basis. (H)
5. EOEA will coordinate with the Division of Tourism to create a state recreation information clearinghouse to provide the public with information on natural and cultural resources and recreation opportunities. (H)
6. DEM, DFWELE and MDC will actively promote public awareness, respect and appreciation for private property rights to enhance cooperative efforts to provide public use of private land. (H)
7. DEM, DFWELE and MDC will develop strategies to promote state facility use among minority populations and increase efforts to hire minority program and facility managers. (H)
8. EOEA will develop and implement a program to promote an environmental ethic in Massachusetts. (H)
9. DEM and MDC will work to gain a better working relationship with public service directors at radio and television stations to promote recreation opportunities. (H)
10. All EOEA agencies will participate in shows, school programs, etc. to promote agency objectives and disseminate information. (M)
11. MDC will implement interpretive plans to increase public awareness regarding the value and sensitivity of watershed lands. (H)

Policy 26 - Public Education (H)

All agencies and political subdivisions of the Commonwealth shall foster a wider understanding of the importance of the protection and stewardship of natural and cultural resources and the care and respect for recreation facilities.

1. EOEA will explore the feasibility of establishing a division or office of Environmental Education and Information to develop and promote a statewide environmental education program. (H)
2. EOEA will initiate a dialogue with the Board of Education to develop strategies for enhancing school supported environmental education programs and for involving students in state agency programs. (H)
3. EOEA agencies will support nonprofit environmental education programs through cosponsorship and other joint ventures. (H)
4. EOEA agencies will evaluate the interpretive needs of each new acquisition to ensure that proposed exhibits, publications, etc., enhance and support the educational message of the site. (H)
5. EOEA agencies will seek funding to increase educational and interpretive programs and encourage staff to engage in educational activities through teaching in the school or bringing school children to facilities for programs. (H)
6. EOEA will conduct a public awareness campaign to discourage the assumption that vacant public land is underutilized and therefore should be used for other public purposes. (M)
7. DEM and MDC will increase educational exhibits to interpret such topics as beach ecology, wetlands and forest ecology, geology, cultural landscapes, pre-colonial history and cultural and social history. (H)
8. MDC will develop an interagency coordinating committee to exchange information regarding environmental education and interpretive programs. (H)

Implementation

The people of the Commonwealth have entrusted that the policies and recommendations of the 1988 SCORP will be implemented by various state and local agencies by seeking the necessary legislation, guidance and resources needed to accomplish the actions included in this 1988 Action Plan.

Policy 27 - Resource Needs (H)

All agencies and political subdivisions of the Commonwealth shall request adequate resources to carry out their mandate and SCORP actions including staff, materials and equipment.

1. EOEA will seek legislation that will establish an ongoing, consistent source of funding for land acquisition, facility development and rehabilitation for the protection and enhancement of natural, cultural and recreational resources. (H)
2. EOEA will monitor agency annual and capital outlay budgets to ensure that the actions of this plan are being considered. (H)
3. EOEA agencies will seek increases in the annual budget for adequate staffing, equipment, public information and handicapped access. (H)
4. EOEA agencies will develop strategies to increase and strengthen staff involvement and communication with management, seeking creative solutions to management concerns. (H)
5. EOEA will work with all agencies to provide a statewide orientation program to promote the policies and actions of the 1988 SCORP. (H)

6. EOEA will explore the feasibility of establishing a dedicated trust fund to ensure a source of funding for agency programs. (M)
7. DEM, DFWELE and MDC will provide incentives to encourage residents to volunteer in outdoor recreation and conservation efforts with a goal of doubling involvement by the year 2000. (M)
8. The SCORP Planner will staff the Technical Advisory Committee, monitor the implementation of SCORP policies and actions, and maintain and update the statewide inventory of properties and facilities in cooperation with EOEA Data Center. (H)

Policy 28 - The SCORP Advisory Committee (H)

All agencies and political subdivisions of the Commonwealth shall continue to seek public involvement in the open space and recreation planning process.

1. The SCORP Technical Advisory Committee (TAC) will develop strategies to increase public participation in the open space and recreation planning process. (H)
2. The TAC will prepare an annual report to the Secretary of Environmental Affairs on the implementation of SCORP policies and actions, making suggestions for further action. (H)
3. EOEA will evaluate the effectiveness of the TAC and continue an active involvement in the appointment of committee members. Representation will be from all EOEA agencies and other appropriate state agencies, non-profits, private sector and municipalities. Members will be appointed by the Secretary and receive a formal orientation regarding the TAC annual goals and objectives. (H)
4. The TAC shall continue to hold annual legislators workshops to share information and pursue mutual areas of concern as identified in the the SCORP. (H)
5. The TAC will further study the results of the public supply and demand surveys and promote appropriate action. (M)
6. The TAC will work to develop statements on other issues or problems throughout the year that may affect the quality of the environment or the provision of outdoor recreation. (M)
7. EOEA will review the purpose and functions of the SCORP TAC and the SACOLARP and consider a merger of the two committees or further clarification of their roles. (H)
8. The TAC will increase lobbying efforts on a National and State level, where appropriate, to further promote the policies and action of the 1988 SCORP. (M)

1988 Wetlands Report and Action Plan

Historically, the Commonwealth has demonstrated a high regard for its natural resources and in particular, the state's wetlands resources which contribute to the quality of life in Massachusetts. This report highlights some of the most significant federal, state and local accomplishments to protect wetlands and provides a five agency state action plan to enhance these efforts.

The Planning Process

The Wetlands Component of the 1988 SCORP was developed in consultation with the five agencies within the Executive Office of Environmental Affairs with particular attention from the Department of Environmental Quality Engineering (DEQE) and the Department of Fisheries, Wildlife and Environmental Law Enforcement, as required by the Emergency Wetlands Resources Act. In addition, the SCORP Technical Advisory Committee, a 30 member advisory group consisting of representatives from state, municipal, private nonprofit and private for profit organizations, assisted in the process.

The report was prepared by the Executive Office of Environmental Affairs, Department of Environmental Management Division of Planning and Development. This report was edited to be included in the 1988-92 SCORP. The original 53 page report is on file at the Statehouse Library. State Publication #15, 300-40-59-3-88-CR.

Purpose and Goals

In 1986 with an awareness of the tremendous threat to our nation's wetlands, the U.S. Congress enacted the Emergency Wetlands Resources Act (Public Law 99-645). This Act promotes the criteria to be considered in determining acquisition priorities. Wetlands that provide a high degree of public benefit, represent threat of loss or degradation will be given priority consideration for acquisition.

In accordance with the Act, the U.S. Fish and Wildlife Service has developed the National Wetland Priority Conservation Plan to assist decision makers in identifying the types and locations of critical wetlands for acquisition. Once the locations are identified acquisition does not necessarily ensue. Rather, identification of a particular location qualifies it for consideration. The decision for purchase is dependent on a variety of factors.

The plan applies to wetlands acquired by Federal agencies and wetland acquired by the Commonwealth using Land and Water Conservation Fund grants administered through the National Park Service and the Commonwealth's Division of Conservation Services.

Additionally, the Act requires consistency between the National Wetlands Priority Conservation Plan and the SCORP process. This requirement illustrates the emphasis placed on the protection of wetland for its outdoor recreation value. Besides protection for providing a balanced ecosystem, the outdoor recreation opportunities provided by wetland environments seem endless. Scenic viewing; fish, shellfish, waterfowl, furbearers and other wildlife habitat for nature observation; hunting and fishing; inland and coastal swimming areas; hiking; boating; ice skating; photography; and educational environmental interpretation are some of the recreational opportunities available in wetland environments.

Therefore, the purpose of Wetlands Component of the 1988 SCORP is to comply with the Emergency Wetlands Resources Act and to prepare a comprehensive planning tool for state agency programs and legislative actions. Establishing goals is paramount to the planning process, as it outlines a vision for future direction and a method for measuring our strengths and weaknesses. The Wetlands Component goals are:

- To comply with the Federal Emergency Wetlands Resources Act, retaining eligibility for Land and Water Conservation Funds.
- To provide a forum for public participation in the Commonwealth in identifying priorities for the acquisition of critical wetland resources.
- To present a comprehensive planning tool for State and Local planners to enhance their efforts in wetlands protection.
- To promote continued coordination and cooperation among state agencies in planning, acquiring and regulating wetland resources.
- To demonstrate state strengths and weaknesses in planning, acquiring and regulating wetlands resources.
- To develop an action plan involving the five agencies within the Executive Office of Environmental Affairs that outlines specific actions which will further the states ability to plan and protect wetland resources.

Wetlands Defined

This report will use the definition of wetlands used in administering the Massachusetts Wetland Protection Act (WPA) (M.G.L.C. 131, S.40). Under the WPA, wetlands are defined as any "bank, freshwater wetland, coastal wetland, beach, dune, flat, marsh, meadow, or swamp bordering on the ocean or any estuary, creek, river, stream, pond or lake, any land under these waters and any land subject to tidal action and coastal storm flowage or flooding." Wetlands are divided into resource areas which are further defined by Chapter 310, Section 10.00 of Code of Massachusetts Regulation as four inland resource areas and ten coastal resources areas.

Inland Resource Areas Include: bordering vegetated wetlands; land under waterways or waterbodies; banks; and land subject to flooding.

Coastal Resource Areas Include: coastal beaches; coastal dunes; saltmarshes; barrier beaches; sand under the ocean; land under salt ponds; rocky intertidal shores; coastal banks; land containing shellfish; and banks or land under the ocean, ponds, streams, rivers, lakes or creeks that underline anadromous or catadromous fish runs.

Also included in the jurisdiction of the WPA is a buffer zone which extends 100 feet horizontally from the resource area (except land subject to flooding) when an activity proposed will alter the adjacent resource area.

This broad definition, as defined by the state WPA, will be used for two reasons. First, it is appropriate to be consistent with the state legislated vocabulary when formulating a state report and plan. Second, it reflects the need to protect as much wetlands habitat as possible.

Federal Planning and Protection

The following is a summary of federal legislation used to protect wetlands. These are given in approximate descending order of importance. A more complete listing is included in the approved wetlands component on file at the Statehouse Library. Publication number 15,300-40-59-3-88-CR.

Clean Water Act of 1972, Section 404 (as amended in 1977 from the Federal Water Pollution Control Act)

This Act requires that persons seeking to conduct activities that would result in the discharge of dredged and fill material into the waters of the United States must first apply for and obtain a permit from the Army Corps of Engineers (ACOE). The intent of the Act is to "restore and maintain the chemical, physical and biological integrity of the Nation's waters". The Corps interprets this as a mechanism primarily for water quality control and only secondarily for the protection of habitat and other values. Other federal agencies, including the Fish and Wildlife Service (FWS), the Environmental Protection Agency (EPA) and the National Marine Fisheries Service (NMFS) see it as intending to protect the integrity of wetlands, including their habitat values.

Rivers and Harbors Act of 1899, Section 10

This Act requires a permit from the Corps to dredge, fill, discharge refuse matter, construct dams and dikes, and other activities that could impact navigation, fish and wildlife, conservation, pollution, aesthetics, ecology, economics, historical value, flood damage prevention, recreation, water supply, water quality, food production and the general public interest. Section 10 jurisdiction extends to navigable waters of the U.S. including all waters which are or were once utilized in interstate or international commerce.

Executive Order 11998: Floodplain Management, May 1977

This Order requires each federal agency to avoid supporting floodplain development where there is a practical alternative. Agencies are charged with the responsibility of providing leadership in restoring and preserving beneficial values of floodplains and in reducing the risk of flood loss and the impact of floods on human welfare.

Executive Order 11990: Protection of Wetlands, May 1977

This Executive Order states that each federal agency in carrying out its duties, take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands.

The Land and Water Conservation Fund Act of 1965

This fund provides up to 50% reimbursement to states and their political subdivisions for acquisition and development of lands for outdoor recreation. Normally 60% of the national appropriations will be for state purposes, 40% federal. Land purchased must be for recreational purposes and must be of certain types including areas that provide special recreational opportunities such as floodplains, wetlands etc., and areas of physical or biological importance and wildlife areas. These must be open to the public to the extent that the natural attributes of the areas will not be seriously impaired or lost.

National Wildlife Refuge System

This system is a key federal program of the FWS involved in the acquisition of wetlands, especially those important for waterfowl breeding and overwintering grounds. In Massachusetts, there are several parcels in the system: Parker River Wildlife Refuge, Ipswich and Newbury, Monomoy Island in Chatham, Great Meadows, Oxbow and Nantucket.

Coastal Zone Management Act of 1972, (as amended by section 315 authorized by the National Estuarine Reserve Research System)

Administered by the Marine and Estuarine Management Division within the National Oceanic and Atmospheric Administration (NOAA), the purpose of this system is to establish and manage, through Federal-State cooperation, a national system of estuarine research reserves representative of the various biogeographical regions and estuarine types in the United States. These are established to provide opportunities for long-term research, education and interpretation.

One such research reserve is Waquoit Bay. In 1987 Massachusetts was awarded a research grant to study vegetation, shellfish and sediments in Waquoit Bay, as well as a New England-wide study on the decline of eel grass.

Coastal Barrier Resource Act of 1982

This Act established the Coastal Barrier Resource System which identified certain coastal barriers along the Atlantic Coast and the Gulf of Mexico coasts that were considered "undeveloped" and "unprotected." In Massachusetts, approximately 45 units were included. The Act aims to minimize the loss of human life, reduce wasteful expenditure of federal revenues, and reduce the damage of fish, wildlife, and other natural resources associated with the coastal barriers.

Emergency Wetlands Resource Act of 1986

This Act promotes the conservation of wetlands to maintain the public benefits they provide, especially those important to the conservation of migratory waterfowl. The EWRA extends the Wetlands Loan Act and provides additional funding to the Migratory Bird Conservation Fund through implementation of entrance fees at some refuges and import duties on arms and ammunition. The Act provides for federal wetlands acquisition and gives equal consideration to acquisition of wetlands with LWCF monies.

Other Federal Legislation

The following is a list of other Federal Legislation protecting our nations wetlands. A short description of each can be found in the original report on file at the Statehouse Library. Publication Number 15, 300-40-59-3-88-CR. Legislation includes:

The Water Bank Act of 1970, Coastal Zone Management Act of 1972, National Environmental Policy Act of 1969, Shoreline Erosion Control Demonstration Act of 1974, National Pollution Discharge Elimination System, National Flood Insurance Program, Flood Disaster Protection Act of 1973, Wetlands Loan Act of 1961, Duck Stamp Act of 1934, Fish and Wildlife Coordination Act as amended in 1958, Endangered Species Act of 1972, Federal Aid to Wildlife Restoration Act of 1937, Federal Aid in Fish Restoration Act of 1950, Food Security Act of 1985, Wild and Scenic Rivers Act, Water Project Recreation Act, Safe Water Drinking Act.

Federal Wetlands Research

U.S. Army Corps of Engineers (ACOE) Waterways Experiment Station

ACOE is the only federal agency that has a program specifically for wetlands research. A 5-year wetland research program was set up by the Corps beginning in 1982. Three research priorities were established: 1) develop improved and standardized techniques in field identification and delineation of wetlands; 2) assess and quantify wetland values for use in evaluating permit activities; and 3) develop techniques for wetlands restoration.

Regional Planning and Protection

New England Interstate Water Pollution Control Commission

This Commission was established in 1947 when the U.S. Congress authorized its formation. The New England Commission's powers and duties come from the six New England states and New York. The Commission has three main functions: 1) coordination of efforts among states including review of legislation and regulations and a forum for discussing and resolving interstate concerns and disputes, 2) education and training personnel in wastewater treatment technology, and 3) dissemination of information to the public.

Wetlands Planning and Protection in Massachusetts

Wetlands Protection Act (GL Ch.131 s. 40)(WPA)

This Act was enacted to protect public interests in both inland and coastal wetlands. Public interests are protected by prohibiting removing, dredging, filling or altering of wetlands without the issuance of a permit called an Order of Condition. Work is permitted to go forward only when it can be done in a manner which protects the interests (e.g. flooding) of the act. This act is administered first by local Conservation Commissions with DEQE involvement beginning with appeals of Conservation Commission rulings. Ninety to ninety-five percent of all cases never go to the state agency for review.

Recent changes include regulations eliminating the use of herbicides in wetlands located within rights of way; special provisions for the protection of rare and endangered wildlife species and an expanded education and training program.

Inland and Coastal Wetland Restriction Acts (GL Ch. 131 s.40A, Ch. 130 s.105) (WRA)

Under these acts the state first maps and then restricts work in entire wetlands systems in advance of any work being proposed, rather than employing the case by case permit system of the Wetlands Protection Act. They are administered directly by the state DEQE and involve mapping all wetland areas, identifying the most important wetlands and imposing a restriction on the deeds. The deed restriction would include a statement of activities that may be permitted because they will not alter wetlands and prohibitions of other activities that will alter wetlands. A Restriction Order is recorded at the appropriate registry of deeds so that all potential future owners will be aware of the restriction. The affected owner may object within a certain time period and have the restriction revoked or receive compensation if the case is brought to court. These acts do not apply within the Metropolitan District of Boston.

Establishment of Conservation Commissions (GL Ch. 40 s. 8C)

Cities and towns within the Commonwealth may establish a commission of three to seven members for the promotion and development of natural resources and for the protection of watershed resources of said city or town. The commission shall conduct research into its local land areas and may establish plans such as conservation and passive outdoor recreation plans. Such plans shall show open areas including marshland, swamps and other wetlands and shall show which areas are subject to restriction or wetlands zoning provisions. The commission may acquire in the name of the city or town interests in land as may be necessary to acquire, maintain, improve, protect or limit the future use of or otherwise conserve and properly utilize open spaces in land and water areas within its city or town, and it shall manage and control the same. The commission may adopt rules and regulations governing the use of lands and waters under its control and prescribe penalties for any violation thereof. Most Massachusetts cities and towns have established conservation commissions. They are the primary enforcers of the Wetlands Protection Act.

Massachusetts Environmental Policy Act (GL Ch. 30, s. 61-62) (MEPA)

MEPA requires that any and all agencies of the Commonwealth review, evaluate and determine the impact on the natural environment of all works, projects or activities conducted, funded or permitted through them and shall use all practical means and measures to minimize damage to the environment. After application for a permit or for financial assistance, the Secretary of the Executive Office of Environmental Affairs shall issue a certificate stating whether an environmental impact report (EIR) is required. If so, the report shall contain statements describing the nature and extent of the proposed project and its environmental impact; all measures being utilized to minimize environmental damage, any adverse short-term and long-term environmental consequences which could not be avoided should the project be undertaken; and reasonable alternatives to the proposed project and their environmental consequences.

Massachusetts Self Help Programs

Administered by the Division of Conservation Services the Self Help program provides funding (up to 80% of cost) for acquisition of land for purposes of conservation or passive recreation. Cities and towns must have established conservation commissions to be eligible. The Massachusetts Urban Self Help Program provides funding (up to 80% of cost) to municipalities with a population of at least 35,000 and with an established parks and recreation commission and conservation commission for acquisition and development of land to be used for active recreation.

Scenic and Recreational Rivers Act (GL Ch. 21 s. 17B)

This act was passed in 1971 to protect the Commonwealth's irreplaceable river resources. It includes: promoting public safety, health and welfare, and protecting public and private property; protection of wildlife and fresh water fisheries; and the protection of irreplaceable wild, scenic and recreational river resources.

Waterways License and Permit Program (GL Ch. 91 s. 1-59)

Administered by DEQE, Chapter 91 has jurisdiction over filling, construction of any new structure, dredging, or removal of sand and vegetation in tideland harbors, great ponds and certain rivers below the high water bank. All tidelands are managed as a public trust by DEQE, and permission to utilize these lands is given in the form of a license. Although intertidal lands may be privately held, no activity that interferes with the reserved public rights of fishing and fowling and navigation in this area are permitted.

Conservation Restriction Act (GL Ch. 184 s. 31-33)

A restriction, easement, or condition in any deed may be executed on behalf of the owner appropriate to retaining land or water areas predominantly in their natural scenic or open condition or in agricultural, farming or forest use to permit public recreational use. The restriction may forbid or limit such activities as construction, excavation, and dumping including activities detrimental to drainage, flood control, water conservation, erosion control or soil conservation or any use except for agricultural, farming, forest or outdoor recreation purposes or purposes permitting the land or water area to remain predominantly in its natural condition.

Other State Legislation

The following is a list of other legislation which enhances the Commonwealth's ability to protect critical wetland environments.

Legislation includes: Area of Critical Environmental Concern Program, Chapter 21, Massachusetts General Laws; Clean Waters Act, Ocean Sanctuaries Program, Article 97 of the Massachusetts Constitution, Executive Order 149; Floodplains 1978, Executive Order 181; Barrier Beaches 1980, Executive Order 190; Regulation of Off-Road Vehicle Use on Public Lands Containing Coastal Wetland Resource 1980; and the Community Sanitation Program.

Conclusion

In general, most of the mechanisms needed for wetlands protection in the Commonwealth are in place, with the possible exception of a program for acquiring storm damaged properties. At present, wetlands are lost in Massachusetts at a rate significantly less than the national average. The remaining problems are largely the result of a lack of program funding. With the institutional framework in place the Commonwealth's most significant challenges to wetlands protection are in the areas of staffing, research and monitoring, education and training.

State Agencies Involved in Wetlands Planning and Protection

In a state with .13 million acres of wetlands, including 1200 miles of coastline, the Commonwealth has developed a number of agencies and organizations which focus on wetlands planning and protection. A great deal of communication among state agencies and nonprofit groups occurs on an informal basis with all organizations recognizing the value of cooperative action to increase effectiveness.

Formally, the state's regulatory agencies coordinate regularly with Coastal Zone Management (MCZM), Massachusetts Environmental Protection Act Unit (MEPA), Department of Environmental Management's (DEM) Ocean Sanctuary Program, Department of Environmental Quality Engineering Division of Wetlands and Waterways (DEQE), and the Department of Fisheries, Wildlife and Environmental Law Enforcement (DFWELE). Of the regulatory agencies, DEQE and MEPA work cooperatively on a large number of wetland projects, reviewing them for compliance with all state and federal regulations. In addition, the DEQE works cooperatively with DFWELE to use the Department's Environmental Law Enforcement capabilities, works with the Natural Heritage Program to promote the recent addition to the state wetlands Protection Act involving the protection of wildlife habitat and works with the Land Acquisition Program to identify critical areas to purchase. All land acquisition agencies work cooperatively with state agencies, local conservation groups, land trust, nonprofit environmental advocacy groups and watershed associations to achieve wetlands protection.

Through the SCORP planning process all state agencies and other environmental organizations are represented on the Technical Advisory Committee enhancing coordination efforts and giving special attention to wetland values related to outdoor recreation. In addition, the Executive Office of Environmental Affairs hosts an Open Space and Land Acquisition Committee of agency representatives which will begin to promote further communication between the regulatory agencies and the land acquisition agencies responsible for wetlands protection.

The Executive Office of Environmental Affairs (EOEA)

EOEA is a cabinet level administrative organization. Its principal authority is to implement and oversee state policies that preserve, protect and regulate natural resources and the environmental integrity of the Commonwealth of Massachusetts.

Within the Executive Office there are five units:

- The Massachusetts Coastal Zone Management Office (MCZM)
- The Massachusetts Environmental Policy Act Unit (MEPA)
- The Division of Conservation Services (DCS)
- The Water Resources Commission (WRC)
- Hazardous Waste Facility Site Safety Council (HWFSSC)

and five departments:

- The Department of Environmental Management (DEM)
- The Department of Environmental Quality Engineering (DEQE)
- The Department of Fisheries, Wildlife and Environmental Law Enforcement (DFWELE)
- The Department of Food and Agriculture (DFA)
- The Metropolitan District Commission (MDC)

Massachusetts Coastal Zone Management

MCZM develops state policy to protect resources and manage development in the coastal zone. In 1978 it became the first program on the eastern seaboard to be granted federal approval. In 1983, the success of the program was recognized and guaranteed state support when the legislature established a permanent Office of Coastal Zone Management.

Massachusetts Environmental Policy Act Unit

The MEPA unit gathers environmental and planning information for state agencies to use in permitting and licensing proposed development. The MEPA statute directs state agencies to "review, evaluate and determine the impact on the natural environment of these works, projects, or activities" and "to use all practicable measures to mitigate their impacts and to minimize damage to the environment".

Division of Conservation Services

DCS assists regional conservation districts and community conservation, park and recreation commissions in their efforts to acquire and preserve open space, conservation and recreation areas. The Division administers five major grant programs which assist communities in the planning, management and acquisition of open space. The Federal Land and Water Conservation Fund and the state's self-help programs reimburse communities for acquiring and developing recreation and conservation land.

Water Resources Commission

The Water Resources Commission develops and coordinates water resources planning and management activity among agencies within EOEA. The commission also establishes priorities and criteria for cooperative programs with the federal government and other state Secretariats.

Department of Environmental Management

DEM is responsible for preserving and protecting the natural resources of the Commonwealth and for managing state lands and waters. The Division of Planning and Development is charged with acquisition and development of new and existing forest and park facilities. The Division is also responsible for the Scenic Rivers Program, planning for the Boston Harbor Islands State Park, and coordination of the Statewide Comprehensive Outdoor Recreation Plan (SCORP) which plans for the protection and enhancement of the state's natural resources.

The Division of Water Resources has three priorities: to collect, refine and update basic water resources data for dissemination to state, federal and local agencies and the general public; to prevent loss of life and damage to property through flood control; and to facilitate the development of a comprehensive water resources management plan for Massachusetts. The Division coordinates the National Flood Insurance Program administered by the Federal Emergency Management Agency and the state Ocean Sanctuaries Program.

The Division of Waterways improves, maintains and protects the Commonwealth's inland and coastal waterways. Programs include the Rivers and Harbors Program which identifies the need for renovations and improvement to the state's inland and coastal waterways, waterways projects which include dredging to maintain navigable channels, beach nourishment, and the construction and rehabilitation of piers and coastal facilities, recreational facilities projects including capital improvements to existing state recreational facilities and construction of new ones, and Public Access projects including the design and construction of marinas and boat ramps.

Department of Environmental Quality Engineering

DEQE administers most of the Commonwealth's environmental regulatory programs. These programs address a variety of concern including air and water quality, solid and hazardous waste disposal, and management of wetlands and waterways. In administering the Wetlands Protection Program, the Division of Wetlands and waterways develops regulations and policies to guide the regulatory process used by conservation commissions. They also respond to appeals of Conservation Commission decisions, issues superseding Orders of Conditions as necessary, and conduct legal hearings if these superseding orders are appealed. They share enforcement responsibility with Conservation Commissions for the Wetlands Protection Act and offer programs of information and technical assistance.

In administering the Wetlands Restriction Programs, the Division places restrictions on the deeds of properties within significant wetlands. About two-thirds of the state's coastal wetlands have been mapped and restricted. The Division is working to complete the process throughout the state. In administering The Waterway Regulatory Program, DEQE is required to review and license activity in state waterways. Before a license is issued, the Division must determine that the proposed project will not interfere with navigation or the operation of public facilities, is structurally sound, promotes public access and will not diminish public rights or the rights of adjacent property owners, and finally, will not adversely impact environmental resources such as wetlands, fish runs, shellfish beds, and fish spawning and nursery areas.

The Division of Water Supply monitors all proposed sources of surface and groundwater, protects public water standards, enforces state and federal drinking water standards, provides guidance to communities in planning for water and land development, and administers grants to fund a variety of water-related projects.

Department of Fisheries, Wildlife and Environmental Law Enforcement

The Department of Fisheries, Wildlife and Environmental Law Enforcement manages the Commonwealth's wild and living natural resources--fish, fowl, game and nongame, as well as rare and endangered plant and animal species. Working through the Division of Fisheries and Wildlife, the Division of Marine Fisheries, the Division of Law Enforcement, and the Public Access Board, the Department administers a broad range of programs aimed at environmental protection and management, assuring the continued stewardship and enjoyment of the Commonwealth's living natural resources by all its citizens.

This mission is premised on the environmental protection of the Commonwealth's natural ecosystems. Protection of the state's critical wildlife habitat and its freshwater and saltwater fisheries is achieved by an aggressive agency land acquisition program with a particular emphasis on natural corridor formation based on the state's river systems. River and stream corridors with their associated wetlands provide the richest repositories of diverse fisheries, wildlife, and flora. They also are of significance to water supply, public health, varied recreational opportunities, and the "quality of life" for Massachusetts residents. The ultimate goal of the Department's acquisition program has been to protect these values and to develop wildlife and recreation "greenway corridors" linking existing open spaces. The protection of coastal estuarine systems and coastal wetlands are similarly critical to the well-being of the state's marine and freshwater fisheries, its wildlife resources, and endangered plant and animal species.

The Division of Fisheries and Wildlife is primarily responsible for promoting the enhancement of the Commonwealth's freshwater and anadromous fisheries, its indigenous wildlife species, and rare and endangered plant and animal species and natural communities.

The Division of Marine Fisheries (DMF) is responsible for the management and protection of all living marine resources in the coastal waters and for the protection of related coastal habitat. They license over 10,000 commercial fishermen and fishing operations, 1,000 fish processors and 12,000 recreational lobster fishermen. DMF also serves the needs of over 500,000 saltwater recreational anglers.

The Division of Environmental Law Enforcement provides environmental enforcement and investigative services to all EOEA agencies. The Division enforces the environmental laws and regulation of the Commonwealth, including violations of the Wetlands Protection Act and of hazardous waste regulations.

The Public Access Board was created in 1966 by the General Court to meet the growing demand for recreational opportunities in coastal and inland waters of the state. The Board works to acquire properties that offer public access to great ponds, rivers, and coastal waters.

The Metropolitan District Commission

Within the MDC the Division of Reservations and Interpretive Services operates and maintains hundreds of acres of open space, manages historic properties, and runs educational facilities like those at the Blue Hills Reservation and the Boston Harbor Islands.

The Division of Parks and Engineering plans and develops new MDC parks, maintains bridges and roads on MDC properties and maintains an elaborate flood control system which includes the Charles River Dam.

The Division of Watershed Management handles operation, planning and regulations for MDC watersheds and reservoirs, including Quabbin and Wachusett. The Division, created in 1984, manages the supply and quality of drinking water for two million people in Metropolitan Boston, develops future water supplies, and responds to consumer needs through its Office of Community Affairs.

Private Organizations

Throughout the Commonwealth there are many private organizations who work cooperatively with state agencies in the identification and evaluation of critical wetlands for protection. Some of those groups include: Conservation Law Foundation, Ducks Unlimited, Massachusetts Association of Conservation Commissions, Massachusetts Audubon Society, The Nature Conservancy and The Trustees of Reservations.

Wetlands Contributions to the Commonwealth

Habitat. Two-thirds of the major species of U.S. commercial fish and shrimp depend on estuaries and salt marshes for nursery areas and spawning activities. Most fresh water fish are dependent on wetlands since many species feed in wetlands or upon wetland-produced food, many fish use wetlands as nursery grounds, almost all important recreational fish spawn in wetlands.

Wetlands are especially important as breeding grounds, overwintering areas, and feeding grounds for migratory waterfowl and numerous other birds. A study of 8 western Massachusetts swamps revealed a total of 46 breeding species. One-third of all bird species rely on wetlands. Furbearers such as muskrats, beavers, otters, mink, raccoons, skunks, and weasels are found in wetlands. Other mammals found in wetlands are various kinds of mice, bog lemmings and shrews. In northern states, white-tailed deer depend on white cedar and other evergreen swamps for winter shelter and food. In western Massachusetts, black bear find refuge and food in forested and shrub wetlands. Reptiles including water snakes and especially the endangered Plymouth red-bellied turtle are wetlands dependent. Nearly all of the 190 North American species of amphibians including frogs and salamanders are dependent on wetlands, at least for breeding.

Water Related Values. To improve water quality, wetlands: 1) Remove nutrients, especially nitrogen and phosphorous for wetland plant growth in order to help prevent eutrophication or over enrichment of natural water; 2) Process chemical and organic wastes; and 3) Reduce sediment loads (turbidity), which is important for aquatic life and for reducing siltation of ports, harbors, rivers and reservoirs.

Wetlands serve to temporarily store flood waters and reduce storm damage by slowing wave velocity and lowering wave heights and thus lessening water's erosive potential. This function has become increasingly important in urban areas where development has increased surface water runoff and the potential for flood damage. Agricultural lands that were once wetlands are especially vulnerable to flooding. In a 1970 study of flood protection measures in the lower Charles River Watershed in Boston, the Army Corps of Engineers concluded that if wetlands were destroyed, flood peaks would increase by two to three feet and flood damage would increase by at least $3 million annually. Loss of all basin wetlands would cause an annual flood damage cost of $17 million.

It is estimated that wetlands in Massachusetts are valuable potential sources of drinking water. Currently, at least 60 municipalities have public wells in or very near wetlands. For instance, the average yearly natural recharge calculated for Lawrence Swamp in Massachusetts was 8 million gallons per day (assuming 44 inches of precipitation per year). The aquifer Lawrence Swamp recharges, however, is of too poor quality to be used as a water supply. The role of wetlands in groundwater recharge is debated and varies according to numerous factors.

Erosion Control. Wetland vegetation reduces erosion in four ways: 1) it increases the durability of sediment through binding with roots; 2) it dampens waves through friction; 3) it reduces current velocity through friction; and 4) it facilitates the build-up of sediment encouraged by dense plant growth.

Harvest of Natural Products. Wetlands produce timber, fish, shellfish, wildlife, peat (used for energy or agricultural purposes), cranberries, blueberries, wild rice and hay for livestock. Harvest of peat, unfortunately, destroys wetlands for most of their associated values.

Recreation and Aesthetics. Wetlands may be used for hunting, fishing, hiking, nature observation and photography, swimming, boating and ice skating. Also valuable are the revenues these activities produce, either through user fees and permits, purchase of sporting goods or taxes.

Wetlands Inventory

Many surveys of wetlands have been conducted in the last ten years but most are limited in area or degree of detail. One agency might conduct a survey, collecting only the information pertinent to its own purposes. Different agencies have different needs and too often, one agency's data are not sufficient for use by another. A statewide inventory of all wetlands should be taken, prioritizing specific types of parcels and regions for acquisition according to the extent a wetland is "rare", "threatened" and "functionally diverse". Although this inventory has not yet been accomplished, the DFWELE will be preparing a State Wetlands Priority Plan for Massachusetts that will identify wetlands that should receive priority attention for state acquisition and in that process will focus on the above categories. Meanwhile the best professional estimates from state agency staff indicate that in Massachusetts certain types of bog environments, under the Fresh Marsh category would be considered "rare". In the "threatened" category, again Fresh Marsh environments are regarded as a priority for protection.

National Efforts

The Land Use Data Analysis Program (LUDA) of the U.S. Geological Survey compiles land use data including wetlands data, based on LANDSAT imagery and aerial photography. Although it represents a complete national data base describing over twenty-five categories of land use and land cover, the wetlands component lacks the detail and accuracy required for strategic assessments.

An inventory of coastal wetlands is currently being compiled by the Strategic Assessment Branch of the Ocean Assessments Division of the Office of Oceanography and Marine Assessment National Ocean Service and Beaufort Laboratory of the Southeast Fisheries Center, National Marine Fisheries Service (NMFS), both of the National Oceanic and Atmospheric Administration (NOAA). This represents the most complete and comprehensive inventory to date.

For Massachusetts, the survey used previous data gathered nationwide by the National Wetlands Inventory, LUDA, a 1983 analysis by Frayer, et al., a 1975 MacConnell study and a 1985 study by Hankin, et al. In 1983, The U.S. Fish and Wildlife Service published a report by Frayer, et al., Status and Trends of Wetlands and Deepwater Habitats of the Contiguous United States 1950s to 1970s.

That study represents the only major attempt to survey both coastal and inland wetlands. Because data was compiled by random sampling rather than a comprehensive history, the report is only meaningful at a national or regional level, not reliable at the state or local level. However, the National Flood Insurance Program (NFIP) administered by the Federal Emergency Management Agency (FEMA) has mapped the majority of the 100 year floodplain areas in Massachusetts. In many cases, these floodplains are associated with coastal and inland wetlands. The following is an inventory, by county of coastal wetlands, from Appendix A (Frayer, et al.) in acres.

Location	Salt Marsh	Fresh Marsh	Swamps	Tidal Flats
United States	4,400,000	1,500,00	5,000,000	211,000
Massachusetts	48,105	15,117	24,867	41,515
Barnstable	15,201	2,884	2,457	17,809
Bristol	3,748	2,077	2,582	3,130
Dukes	1,028	70	315	1,259
Essex	18,027	1,963	4,567	6,088
Middlesex	0	3,574	6,540	0
Nantucket	657	308	122	137
Norfolk	1,057	656	2,565	2,335
Plymouth	7,400	3,534	5,626	9,370
Suffolk	987	51	93	1,387

The Frayer study concludes that the Nation (that is, the 48 contiguous states) has 11.32 million acres of wetlands on its coast. Massachusetts, with .13 million, has 1.1% of the national total.

In 1974 The National Wetlands Inventory Project (NWI) was established under the U.S. Fish and Wildlife Service to gather information such as: 1) detailed maps to be used by local, state and federal agencies as well as private industry and organization for many purposes, including comprehensive resource management plans, environmental impact assessments, permit review, facility and corridor siting, oil spill contingency plans, natural resource inventories and wildlife survey; and 2) status and trend reports that are needed to provide improved information for reviewing the effectiveness of existing programs and policies, for identifying national or regional problems and for general public awareness.

A 1982 evaluation of NWI maps by the University of Massachusetts determined that the maps completed so far had accuracies above 95%. This was achieved because the NWI technique involves a combination of field studies, photo interpretation, use of existing information and interagency mapping. A list of individual tracts is not yet available. The photo interpretation should be complete by the end of 1988. When the analysis is complete, this will represent the best data available for use at all levels of management. If repeated every ten years as planned, further analysis will give excellent data for status and trend reports.

State Efforts

In 1975, a report entitled Remote Sensing 20 Years of Change in Massachusetts 1951/52 - 1971/72 was published by the Agricultural Experiment Station at the University of Massachusetts. A study and mapping of land-use and vegetative cover was conducted using aerial photography and analysis. Among the objectives is the establishment of predictions of future rates of change including population growth, land-use and changes in area, location and character of wetlands.

The Lloyd Center for Environmental Studies and the Massachusetts Coastal Zone Management Program (MCZM) compiled an inventory of coastal wetlands entitled Barrier Beaches, Salt Marshes and Tidal Flats: An Inventory of the Coastal Resources of the Commonwealth of Massachusetts. Acreage of individual salt marshes and tidal flats was taken from NWI maps provided by U.S. FWS through their Region V Office. Acreage of barrier beach units was developed from an inventory prepared for the MCZM Program by the Provincetown Center for Coastal Studies. The photographs the map interpretation was based on were taken in 1977. The following table is a result of that compilation.

State and County Acreage of Three Major Wetlands Resources

	Barrier Beaches	Salt Marshes	Tidal Flats
Massachusetts	18,888.0	48,104.6	41,514.2
Barnstable County	8,723.1	15,201.0	17,808.6
Bristol County	1,008.1	3,748.0	3,130.5
Dukes County	2,135.7	1,027.7	1,258.7
Essex County	2,955.4	18,026.9	6,087.7
Middlesex County	0.0	0.0	0.0
Nantucket County	1,841.7	678.3	136.9
Norfolk County	95.7	1,056.7	2,334.6
Plymouth County	1,933.3	87,400.0	9,369.9
Suffolk County	194.5	987.0	1,387.3

A study will be undertaken by University of Massachusetts to both inventory and evaluate inland wetlands according to the above values. An estimate of fresh water wetlands will be provided by DEQE before the University of Massachusetts study is complete.

Wetland Trends

Information from the U.S. Fish and Wildlife Service's National Wetlands Trends Study (NWTS) (Frayer, et. al., 1983), is the most reliable information available. It has strong statistical validity for nationwide figures on wetland gains and losses and documents what happened to wetlands prior to implementation of the 404 program.

Causes for Wetland Gain and Loss

Major sources of loss identified in NWTS include conversions to agricultural use, urban use, deep water, nonvegetated wetlands and other uses such as forestry, rangeland and mining. Major development activities associated with the loss of wetlands included dredging and excavation filling, draining, clearing, and flooding. More specifically: drainage for crop production; timber production; mosquito control; dredging and stream channelization for navigation channels; harbor and marina development; flood protection; coastal housing developments; reservoir maintenance and construction; filling for dredged spoil and other solid waste disposal; roads and highways; commercial, residential and industrial development; and sanitary landfills; construction of dikes, dams, levees and seawalls for flood control, water supply, irrigation and storm protection; discharges of materials (e.g., pesticides, herbicides, other protection pollutants, nutrient loading from domestic sewage and agricultural runoff, sediments from dredging and filling, agricultural and other land development) into waters and wetlands; and mining of wetlands soil for peat, coal, sand, gravel, phosphate and other materials. Indirect causes of loss are sediment diversion by dams, deep channels and other structures; hydrologic alterations by canals, spoil banks, roads and other structures; subsidence due to extraction of groundwater, oil, gas, sulphur, and other minerals.

Wetland characteristics may change and acreages may increase or decrease in response to natural factors apart from, or in addition to, the development activities listed above. For instance, natural succession and activity of increased beaver populations were the greatest factors associated with wetland alteration in Massachusetts between 1951 and 1977. Today agriculture, road construction and other buildings are the chief causes for loss in Massachusetts. For example, at least 1500 acres of the Middleboro Cedar Swamp were drained by Cumberland Farms for farming.

The rise in sea level both increases and decreases wetland acreage depending on local upland characteristics. Mean sea level has risen 350-400 feet during the last 12,000 to 15,000 years and the shoreline has retreated many miles over that time period. Today, the rate of sea level rise is approximately one foot every 100 years, but is predicted to increase dramatically over the next centuries. A recent report from MCZM provides scenarios ranging from 1.8 feet to 11.3 feet rise in the next 100 years, but is predicted to increase dramatically over the next century. This rise produces shoreline retreat on the average of three feet per year on outer Cape Cod.

According to FWE classifications, two wetland types experienced gains between the mid 1950s and the mid 1970s: inland flats and ponds. Lake acreage increased by 1.4 million acres nationwide with 94% of this gain occurring in the eastern half of the country. Pond acreage nearly doubled from 2.3 million acres to 4.4 million acres, due primarily to farm pond construction in the Central and Mississippi Flyways. Most of these ponds and reservoirs were created from upland, but .43 million acres of vegetated wetland were changed to open water. Some new wetlands, however, have formed along the edges of these new waterbodies. In Massachusetts, an analysis of wetland trends in 15 towns between 1951 and the mid 1970s shows beaver activity was the third most important cause of increases in wetland acreage out of 11 identified factors.

Nationwide Trends

Rates of loss have fluctuated over the years since European settlement. The greatest losses occurred in 15 western and mid-western states during the mid 1800s to the early 1900s where the federal government granted all swamp and overflow lands to states to be drained for agriculture. About 65 million acres were transferred. The original 13 states and Texas retained their wetlands during that time, losses in these states have been more recent. Between 1954 and 1978 the loss rate of coastal wetlands doubled, due primarily to post-war urban and industrial development and to accelerated erosion and subsidence of Louisiana's vast coastal marshes.

Although not accurate enough for regional analysis, the NWTS is good basis for nationwide analysis of rates between the mid 1950s and the mid 1970s. NWTS reports 90 million acres of wetlands as of the mid 1970s and 11 million acres converted between the mid 1950s and the mid 1970s with a 5% net loss each year (for the 48 contiguous states). Present rates are half that of the 1950s and 1960s due to decreased rates of agricultural drainage and increased scrutiny of governmental programs. Coastal wetlands are fairly well protected. Nationwide, 95% of losses were of inland wetlands, 53% of these in forested areas, due mainly to conversion to agriculture (80%). Coastal losses were due to dredging and erosion (56%) and urbanization (22%).

Since European Settlement

It is difficult to determine total acreage loss, since the amount of acreage at the time of European settlement is disputable. Various estimates are available but the lack of good data on the amount of land that has been drained or otherwise reclaimed and the difficulty in distinguishing between wet soils and wetlands make for a wide variety of estimates. The Office of Technology Assessment report, Wetlands, their Use and Regulation, derives a maximum value for original wetlands of 185 million acres. If this figure is accepted, then as much as 50% of the original wetlands may have been converted nationwide. U.S. Fish and Wildlife, relying with confidence on a 1954 report of Roe and Ayers, claims an original 215 million acres, making for a 54% loss when matched with the 99 million remaining acres inventoried by Frayer in the 1970s.

Regional Trends

Regional studies from NWTS although not accurate, can give a very general idea of trends. In the Adirondack-New England subdivision of the Eastern highlands region, including western Massachusetts a net gain from agriculture is reported. These findings are supported by the results of the New England case study which reports a gain in acreage from agricultural abandonment and the lack of maintenance of drainage ditches. Losses in New England from urban development especially coastal urbanization and the cumulative impacts of small projects along with losses from forestry, mining, port development and construction make the total change in acreage in New England a net loss.

From urban development in New England, the case study reports that coastal wetlands were filled for residential and industrial/commercial development and highway construction. Conversion rates have probably been reduced considerably due to the increased effectiveness of state and federal regulations. Some increase in acreage was reported from abandoned agricultural sites.

Statewide Trends

In a 1983 report, from the University of Massachusetts Water Resources Center, an annual statewide wetland loss rate of .4% is reported from a 1978 U.S. Soil Conservation Service report. In Massachusetts the primary offender contributing to wetlands lose has been urbanization. Today, with the increase in public awareness and the effectiveness of state and local legislation and programs, development pressures have been directed away from wetland systems. The concern today is for development in the uplands centers on the effects on the alteration of natural drainage patterns and other wetlands effects. As we approach the 21st century, one of the major challenges facing planners is the statewide transportation system. For environmentalists, this means a constant vigil for planning for the protection of precious resources.

A large percentage of inland wetlands are lost to agricultural conversions because they do not require section 404 permits. Such activities are usually either covered by nationwide permits or are exempted under the law because they entail no dredge or fill activities. Even where activities require individual permits, section 404 does not have much effect on conversions, only when a complaint is lodged, or for very large projects because strict enforcement is impossible with current staffing levels.

According the Director of the Environmental Institute at the University of Massachusetts, the best estimate of original wetlands acreage in Massachusetts comes from a report from Ralph Tiner, now of U.S. FWE entitled Hydric Soils of New England. Since the physical conditions that create wet soil are less likely to change than the plant and animal communities that inhabit those wet areas, wet soils continue to be present long after a wetland has been destroyed (in most cases). Thus, the percentage of hydric soils today represents a crude estimate of original wetland acreage. According to Ralph Tiner approximately 16.5% of Massachusetts is covered by hydric soils. ANWI preliminary analysis estimates that currently six to seven percent of Massachusetts is classified as wetlands. This would mean a loss of between 58% and 64% percent of Massachusetts wetlands.

Wetlands as a Priority for Massachusetts

Wetlands preservation is now and has been for many years a priority in Massachusetts. In 1963, the first wetlands protection law in the country (the Jones Act) was passed. The bay state was the first in the nation to limit off road vehicle use on state owned beaches. Also in 1978, Massachusetts was the first state on the eastern seaboard to be granted federal approval for its Coastal Zone Management program. Massachusetts' subsequent passage of the Wetlands Restriction Acts established a unique program that now provides a permanent means of protecting sensitive wetland areas with conservation restrictions. The current Coastal Acquisition Program has been successful with many of the available parcels of property on Cape Cod having been acquired. Belle Isle Marsh was recently acquired by MDC and has been reclaimed as a public salt marsh in Boston. In the years 1984 and 1985, 43 parcels of coastal property were acquired by DEM, totalling over 1,900 acres. DFWELE is continuing to purchase salt marshes for waterfowl habitat and continues a strong enforcement program complimenting DEQE regulatory programs.

During 1983, administrative responsibility for the Wetlands Restriction Program was transferred from DEM to DEQE. Statutory authority was transferred in 1986. MCZM conducted a review of restricted areas and provided a draft list of priority coastal wetlands. In 1986 MCZM helped fund a review and prioritization of the Restriction Program statewide and its future implementation. Lack of funding jeopardizes the further effectiveness of the program. In 1986, MCZM funded DEQE to complete restriction in Mashpee and in the Back River Area of Critical Environmental Concern.

The Commonwealth's consistent policy of protection has given it a rate of loss of .4% in 1978 (according to a U.S. Soil Conservation Service Report) less than that of the rest of the Country (0.5% - 1.0% in the mid-1970s). This has been because of long term commitment to wetlands protection, not the type of drastic, desperate measures that were necessary in some states (e.g., New Jersey, Delaware). A strong, active local constituency within the cities and town of the Commonwealth also provides political support and enhances public awareness of the values of wetland systems.

In the Frayer study of 1983, by U.S. Fish and Wildlife, Massachusetts was not mentioned as a problem area of national significance, except by virtue of being on the coast and thus included in the general problem category of the U.S. Coastal Zone. With the establishment of the Conservation Commissions, strong state programs and effective legislation wetlands protection will continue to be a high priority well into the 21st century and beyond.

Priorities for Acquisition

Along with the existing priorities for coastal acquisition, the acquisition of wetlands in the metropolitan Boston area and the acquisition of fresh water bodies for swimming and other outdoor recreation activities, State priorities include a variety of other areas for consideration. As a primary protector of critical wildlife habitat, freshwater and saltwater fisheries the DFWELE will continue its aggressive land acquisition program with emphasis on natural corridors within the state's river systems. In addition, DWFELE has recognized and will attend to the protection of coastal estuarine systems and specifically coastal wetlands.

Action Plan for Wetlands

As evidenced by the low rate of loss of wetlands relative to national levels, Massachusetts does view wetlands protection as a priority. It is important to recall, however, that the "crunch" in wetlands development is yet to come since much of the buildable land is gone and the pressure will now be on property that contains wetlands. Before the recent quantum leap in land value, developers passed over marginal land, but the return is now worth the extra effort to gain local approval. It is more and more important to protect wetland values. The Wetland Protection Act and the Wetlands Restriction Act (coastal and inland) are good mechanisms for the wetlands protection, the Executive Office of Environmental Affairs and its constituents units and departments will continue to investigate and develop new programs and ways of increasing the effectiveness of existing programs.

Executive Office of Environmental Affairs (EOEA)

EOEA will investigate current tax policy and recommend to the legislature a policy of tax incentives for farmers and industry to conserve wetlands. For example, EOEA will ensure that the soil conservation service will fully implement the "swampbuster bill" of the 1985 Food Security Act.

EOEA will continue to support an Administration proposal to increase staff and funding for the continued implementation of the Wetlands Restriction Program.

EOEA will increase efforts with private sector organization to protect, acquire and inform the public about wetlands.

EOEA will strive to increase public awareness of the values of wetlands, especially inland wetlands.

EOEA will continue support of a new fee structure increasing funding to local conservation commissions to help in the administration of the nearly 10,000 permits processed annually in accordance with the WPA.

EOEA will outline a proposal for research on wetland values and artificial wetland replication as part of a larger program determining the value of open space.

EOEA will increase efforts to determine the appropriate inland wetland Areas of Critical Environmental Concern (ACEC) candidates.

EOEA, Division of Conservation Services (DCS) Conservation Districts will develop policies that will promote the protection of wetlands through the control of sedimentation and erosion.

EOEA, Massachusetts Coastal Zone Management (MCZM) will assist DEQE in determining future priorities for restricting coastal wetlands restriction under the Wetlands Restriction Program.

MCZM will investigate the cumulative impacts of development projects on coastal wetlands and develop recommendations for assessment and review.

MCZM will continue to administer the coastal ACEC program to protect environmentally sensitive areas.

MCZM will continue to provide technical and education assistance to coastal conservation commissions and state agencies in the review of proposed projects.

MCZM will continue to review and comment on projects subject to the MEPA process.

MCZM will continue to coordinate state activities that involve barrier beaches.

MCZM will continue to participate in coastal disaster recovery measures to insure mitigation of damages on the coastal floodplain.

MCZM will encourage the acquisition of coastal floodplain areas.

MCZM will draft policy recommendations for responses to projected sea-level rise.

MCZM will encourage shoreline protection measures through the use of dynamic processes such as the planting of appropriate vegetation and beach nourishment, instead of the construction of solid coastal engineering structures.

Department of Environmental Quality Engineering (DEQE)

DEQE will continue to develop and implement its strategy for eliminating the wetlands permit backlog.

DEQE will develop a work plan for the future implementation of the Wetlands Restriction Program by January, 1989.

DEQE will hire personnel to help assess and clean up hazardous waste sites that are found in wetlands and floodplains.

DEQE will continue to utilize administrative penalties to enforce wetlands protection regulations.

DEQE Division of Wetlands and Waterways Director will foster interagency coordination of wetlands and related wildlife, water quality and supply, flood control and other programs by working with the EOEA Open Space and Land Acquisition Committee to host an annual coordination meeting.

DEQE will continue efforts to provide education and training to local conservation commissions.

Department of Environmental Management (DEM)

DEM's Division of Water Resources (DWR) will continue to serve as the state coordinator for the National Flood Insurance Program (NFIP).

DEM will continue to visit Massachusetts cities and towns to evaluate local floodplain management practices for compliance with NFIP and state requirements.

DEM will continue to provide assistance to local permitting officials to assist them in understanding and applying state floodplain management regulations.

DEM will continue to provide workshops to interested parties including local officials providing technical assistance about floodplain management and related issues.

DEM will continue to provide assistance for those communities wishing to adopt or revise a floodplain district zoning bylaw.

DEM will continue its efforts to develop/support legislation to establish a state Bureau of Floodplain Management which will serve to coordinate floodplain management activities among the various state agencies.

DEM will continue to administer the Ocean Sanctuaries Program which protects designated ocean areas from environmental harm.

DEM's Division of Planning and Development will incorporate upland buffer areas adjacent to significant wetland resources to the criteria for the evaluation of land for acquisition.

DEM's Division of Planning and Development when considering grants to organizations for the Scenic Rivers Program will consider, in addition to other criteria, projects that have value in wetlands protection.

DEM's Division of Planning and Development will continue to advocate on behalf of the recently published Land Acquisition Strategy 1986 - 1991 (July, 1987) for conservation of wetlands.

DEM's Division of Planning and Development will continue to consider wetland values and their protection when conducting management planning efforts at existing state forests and parks.

DEM's Division of Planning and Development will coordinate with other state wetland agencies to set priorities for acquisition of wetlands. These priorities will be periodically reviewed and updated as available data changes.

Department of Food and Agriculture (DFA)

The Department of Food and Agriculture will host a meeting with representatives from the cranberry growers association, DEQE and appropriate agencies involved with wetlands protection. The purpose of this meeting will be to consider policies regarding the restoration, reclamation and creation of cranberry bogs.

Department of Fisheries, Wildlife and Environmental Law Enforcement (DFWELE)

DFWELE will prepare a State Wetlands Priority Plan for Massachusetts that will identify wetlands that should receive priority attention for state acquisition because of their high natural ecosystem and wildlife and fisheries habitat value.

DFWELE will identify for possible acquisition wetlands in Massachusetts that have been damaged by human activity but that can or should be restored to a functioning natural condition.

DFWELE will through its Riverways Program intensify efforts to form cooperative networks among private organizations, local governments, and state agencies to more adequately protect and manage wetlands found in river corridors.

DFWELE will through DFW evaluate the suitability of wetlands proposed as replacements for Land and Water Conservation Fund lands slated for conversion to other uses.

DFWELE will work closely with the United States Fish and Wildlife Service in the preparation of the Wetlands Concept Plan for the Northeast Region.

DFWELE will work with the Farmers Home Administration to review FHA inventory lands in Massachusetts for acquisition and protection in accordance with the Food Security Act of 1985 and similar federal laws having provision for protecting wetlands.

DFWELE through its Natural Heritage and Endangered Species Program will expand its efforts under the Wetlands Protection Act to protect rare species habitat and vernal pools in wetlands.

DFWELE through its Natural Heritage and Endangered Species Program strengthen its environmental review activities regarding proposed development actions in inland and coastal wetlands.

DFWELE through its Division of Marine Fisheries will strengthen its activities of reviewing and commenting on all projects affecting coastal and marine habitats under the Fish and Wildlife Coordination Act and the Wallop-Breaux Amendments.

DFWELE through its Division of Law Enforcement will investigate methods of efficient enforcement of existing wetlands protection programs and make recommendations in consultation with DEQE. Environmental enforcement officers within the Division of Law Enforcement can provide early detection and quick response to wetland violations while the DLE radio room could provide a single toll free number to reduce confusion and ensure correct dissemination of complaints to proper agencies.

Metropolitan District Commission (MDC)

MDC will promote the acceptance of the bill filed with the Legislature that will amend Section 104 of Chapter Ninety-Two of the General Laws, that will clarify and update existing zoning and protection tools, related to wetland, for both local and state governing bodies.

MDC will work with DEM and the Nashua River Watershed Association to protect the Stillwater River's water quality and to conserve the river's resources.

MDC through the Division of Watershed Management will continue to assist the 40 communities within the MDC in establishing measures to protect wetlands linked to the drinking water supply.

MDC through the Division of Watershed Management will seek funding for the position of Environmental Analyst to increase watershed protection in MDC watersheds.

MDC will expend funds from the $30 million Open Space Bond to identify and acquire key watershed parcels.

MDC will continue to study the Wachusett Reservoir with respect to taste and odor causing algal blooms. In addition, MDC will continue their investigation regarding reservoir pollution and algal nutrients.

MDC, through its Reservation and Historic Sites Unit's Environmental Analyst, will continue to review activities of projects that may impact MDC properties, including wetlands. In addition, the analyst will provide agency representation for environmental protection at a wide variety of project meetings.

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Division of Conservation Services Open Project Selection Process

Overview of the Division of Conservation Services (DCS)

The Division of Conservation Services is a state agency located within the Executive Office of Environmental Affairs established primarily to assist municipalities and private individuals in managing and properly developing open space and recreation land. The Division provides this assistance through:

- the administration of five grants-in-aids programs:
  - the Federal Land and Water Conservation Fund (Public Law 88-578);
  - the Self-Help Program (Chapter 132A, Section 11);
  - the Urban Self Help program (Chapter 933, Acts of 1977 as amended);
  - Strategic Urban Recreation Facilities (SURF, Chapter 564); and
  - Strategic Acquisition of Vulnerable Environments (SAVE, Chapter 564).
- a review of municipal open space and recreation plans which are required for participation in the grant programs;
- administration of funds allocated to the Conservation District, who in turn provide technical assistance to cities and towns writing open space and recreation plans;
- the provision of technical assistance to municipal conservation and recreation commissions and to private individuals in natural resource matters;
- promulgation of regulations and requirements for participation in the grants programs; and
- review and processing of conservation restrictions (M.G.L.) Chapter 184, Sections 31-33.

1987 Open Space Bond

Efforts to protect, acquire and manage Massachusetts' natural heritage received a tremendous boost by the legislature at the end of 1987 when Governor Dukakis signed the $500 million Open Space Bond. The Division will also administer two new open space grant programs put forth in Chapter 564 of the Acts of 1987: the Strategic Urban Recreation Fund (SURF) and the Strategic Acquisition of a Vulnerable Environment (SAVE). Because of this new legislative mandate, new regulations have been promulgated for these two programs as well as the existing Self Help and Urban Self Help programs and will be promulgated for SURF and SAVE.

The Open Project Selection Process

The administration of the federal Land and Water Conservation Fund (LWCF) is the responsibility of the Executive Office of Environmental Affairs, Division of Conservation Services (DCS) and the Department of Environmental Management (DEM). DEM is responsible for maintaining state eligibility to participate in the LWCF program through preparation of the SCORP which guides public and private recreation and conservation investments in Massachusetts.

The Division of Conservation Services administers the grants programs using selection criteria reflective of SCORP policies and monitors the expenditure of these funds. Applications for funding are reviewed and rated by DCS and are submitted to the SCORP Technical Advisory Committee for approval. This committee is comprised of nearly 30 representatives of recreation conservation, handicapped, minority, federal, regional, state and local interest groups. Once the 1988 SCORP is produced, the SCORP Technical Advisory Committee will review the current project ranking system, recommending changes to reflect new SCORP policies.

Criteria for Ranking Projects

To apply for state and/or federal conservation funds in Massachusetts, communities must have an approved open space plan on file with the Division for Conservation Services. The development of the plan must involve local and regional participation. The plan must contain an analysis of local needs and a five year recreation/conservation plan. The community must also be in compliance with affirmative action, fair housing and handicapped accessibility practices. Prior to consideration the projects must comply with the intent of the funding program to which application is made.

Projects from sponsoring communities that have met the above prerequisites are ranked according to a point system that contains 110 points. The criteria used in the system reflects the following: the community's ability to maintain the project over the long term, the amount of LWCF and USH received previously, the importance of the project in the community's open space plan, accessibility by public transportation, serving special needs, and project quality and impact.

Projects are initially ranked by the staff of DCS with assistance from field monitors. The staff of the DCS then meets with the SCORP TAC Selection and Review Subcommittee to do the subjective ranking. DCS and the subcommittee make recommendations for final funding to the full TAC, at which time final selections are made.

Ranking of Projects

Municipally sponsored projects are ranked through the selection system, while state sponsored projects are reviewed on a case by case basis. The municipal projects are ranked initially by DCS staff. The Selection & Review subcommittee from the SCORP technical Advisory Committee meets to discuss the projects, their numerical ranking, and the sponsoring municipality's compliance with affirmative action, fair housing practices and 504 regulations. Through this meeting the subcommittee may recommend the funding of a project which has scored low but warrants funding because it may be critical to a community, may preserve a natural resource or may have regional significance. Representatives from sponsoring communities may be present at these meetings. The subcommittee then presents its recommendations at the full SCORP TAC meeting. Projects may be reviewed again, and controversial projects discussed at length. The final recommendations of the SCORP TAC and DCS are sent to the Secretary of Environmental Affairs for final approval.

State/Local Allocations

To ensure the funding of the highest quality recreation/ conservation projects, neither Massachusetts LWCF nor the Urban Self Help program utilize a formal split approach for state and municipal projects. During 1977 in developing the selection system the split approach was considered. The committee discussed the idea of having certain fixed percentages of the funds for state and local projects. The idea was dismissed as it was felt that lesser quality projects may be funded to fulfil the fixed percentage of funds in a category.

Since municipal autonomy is so strong in this state, determining municipal needs is the responsibility of the municipality. Therefore, the selection system attempts to guide communities by awarding points to those projects that are consistent with SCORP policies and are identified as priority projects by the community in its Open Space Plan.

Public Participation in Formulation of Projects

During the development of a local project proposal the sponsor community must go through a series of events that require public participation - local open space plans require public involvement, each community is required to go through A-95 review, towns vote on projects at town meeting and cities have extensive requirements for public participation. State projects go through the capital outlay planning process that incorporates SCORP policies. The SCORP TAC also reviews these projects to ensure consistency with SCORP policies and programs.

Funding Cycle

The LWCF program in Massachusetts is very well known, the program, the application requirements, and funding cycle are published in the Environmental Monitor, the A-95 Monitor and the Regional Planning Agencies newsletters. Also, the program is discussed each year at the annual meeting of the Massachusetts Association of Conservation Commissions and the Massachusetts Recreation and Park Association.

The Division of Conservation Services and the Department of Environmental Management personnel have maintained an informal but on-going relationship with the cities identified as critical areas of need by the 1983 SCORP. Technical assistance is provided to these cities and any towns that request assistance. Given the fact that Massachusetts has 351 cities and towns and the available staff time is limited, the agencies must wait for the request to come from the community. Technical assistance is provided by agency personnel in the preparation of local open space plans, the application process for state/federal funding, and through the availability of guidelines and application procedures. Critical needs, as defined by the SCORP TAC policy plan, are also promulgated during these meetings.

The planning and grants staff offer different approaches to technical assistance to communities. The grants field personnel assist in the preparation of local open space plans and in the application for funding. The planning staff, through the non-profit organizations, have provided assistance to those communities that have not previously solicited state assistance. The total outreach effort: field personnel and non-profit contracts, is budgeted in excess of $250,000.

Evaluation

Given the political climate, strong local autonomy and the organizational constraints of state government, the open project selection process that has been implemented works very well. Overall, the program (SCORP planning and grants) has become a more visible and responsive program with the increased role for public participation in Massachusetts. The following information documents the current Open Project Selection Process.

Step in Process	Time Frame	Insertion of SCORP Policies
Town initiates process by requesting information	Year round	Addendum which includes new SCORP Policies is sent to Community.
Publicity about fund programs and deadlines	April 1	Include new emphasis of SCORP.
Open Space Plans submitted application and rating	July 1	Projects which adhere to SCORP policies rate higher.
Final Awards - plans specifications, contracts	November	Details reflecting new SCORP emphasis will be included in contracts.

Urban Self-Help and Land and Water Conservation Fund Rating System

Section I: Project Evaluation Possible Points

1. **Consistency with SCORP Policies**

A. Local urban acquisition or development project (cities and towns with populations over 35,000) or development of project previously acquired with state USH and federal LWCF funds. 4

B. Regional or statewide facilities readily accessible to urban residents defined as the following:

- a regional park must have parking facilities for 100 cars, a comfort station, and 35,000 people within a 25 mile radius.
- a statewide park must have parking facilities for 200 cars and be located within a 1 hour drive of more than one metropolitan statistical area and/or within walking distance (1/2 mile) of public transportation which provides 3 round trips daily, and have an appropriate number of comfort stations. 6

C. Cooperative joint ventures between government and an appropriate local/conservation/environmental non-profit organization providing financial help for acquisition, planning, or development.

Implemented	6

D. Long-term maintenance plan that includes sources of funding and takes into account cost of living and inflation increases.

Exists	5
Implemented	5
Maximum Possible	**10**

2. **Open Space Acquisition** in high growth or high density areas: to verify the need for open space or the existence of high growth/high density areas, communities should submit the following information:

- figures on building density or land use
- rate of household growth (in %)
- figures on population increases (in gross numbers)

Negative or zero growth	0
High growth or high density	4
Maximum possible	**4**

3. **Acquisition and Development of Unique Parcels** with natural or cultural resources or projects which are a part of a linked system (conceptual, geographical, physical) of conservation, recreation, or protected land areas or facilities; accessible for general public use.

Maximum Possible	**4**

4. **Planning and Implementation**

• approved recreation/open space plans	5
• implementing plan	5
Maximum Possible	**10**

5. **Water Resources**

• project contains a water resource which can be used for outdoor recreation	5
• coastal area (beach) or major inland water resource (pond/lake)	5
Maximum Possible	**10**

6. **Project Quality and Impact**	
Subjective judgment of:	
• project impact on service area	
• project quality	
• design of project	
Maximum Possible	**2**
7. **Project Innovation**	
• creative, innovative approaches to providing outdoor recreational uses (multi-use or multi-seasonal facilities or area)	
Multi Use	2
Multi Seasonal	2
Maximum Possible	**4**
Subtotal	60
Section II: Demographic Factors (Data from most recent national census.)	
8. Population Density	1-10
9. Households Below Poverty Level	1-10
10. Median Income Per Household	1-10
11. Equalized Valuation Per Capita	1-10
Subtotal	40
Section III: Bonus Points	
Subtotal	10
Total Available Points	110

Table 1

Population Density (persons per square mile)

Weighted to favor municipalities with high population concentrations and therefore greater need for open space.

	Previous USH and LWCF Dollars per Capita					
Persons per Square Mile	0-2.99	3-6.99	7-10.99	11-20.99	21-25	25+
0-99	1	1	1	0	0	0
100-299	2	2	2	1	1	1
300-499	3	3	3	2	2	2
500-999	4	4	4	3	3	3
1,000-1,499	5	5	5	4	4	4
1,500-1,999	6	6	6	5	5	5
2,000-4,999	7	7	7	6	6	6
5,000-9,999	8	8	8	7	7	7
10,000-15,999	9	9	9	8	8	8
+16,000	10	10	10	9	9	9

10 Possible Points

Table 2

Percent of Households Below Poverty Level

Weighted to give priority to municipalities having a high percentage of families below the poverty level.

	Previous USH and LWCF Dollars per Capita					
Percent of Households Below Poverty Level	0-2.99	3-6.99	7-10.99	11-20.99	21-25	25+
00-1.9	1	1	1	0	0	0
2.0-4.9	2	2	2	1	1	1
5.0-6.9	3	3	3	2	2	2
7.0-7.9	4	4	4	3	3	3
8.0-8.9	5	5	5	4	4	4
9.0-9.9	6	6	6	5	5	5
10.0-10.9	7	7	7	6	6	6
11.0-11.9	8	8	8	7	7	7
12.0-12.9	9	9	9	8	8	8
13.0-14.9	10	10	10	9	9	9
15.0+up	10	10	10	10	10	10

10 Possible Points

Table 3

Median Income

Maximum points to be awarded to municipalities whose median income level is below state median. Data from the most recent national census.

	Previous USH and LWCF Dollars per Capita					
Median Income	0-2.99	3-6.99	7-10.99	11-20.99	21-25	25+
$30,000-up	1	1	0	0	0	0
$24,000-29,999	2	2	1	1	0	0
$22,000-23,999	3	3	2	2	1	1
$20,000-21,999	4	4	3	3	2	2
$18,000-19,999	5	5	4	4	3	3
$16,000-17,999	6	6	5	5	4	4
$15,000-15,999	7	7	6	6	5	5
$14,000-14,999	8	8	7	7	6	6
$13,000-13,999	9	9	8	8	8	8
$12,000-12,999	10	10	9	9	9	9
below $12,000	10	10	10	10	10	10

10 Possible Points

Table 4

Equalized Valuation per Capita

Preference given to municipalities with low equalized values, assuming equalized values reflects to some degree ability to pay for acquisition of open space.

	Previous USH and LWCF Dollars per Capita					
Equalized Valuation/Capita	0-2.99	3-6.99	7-10.99	11-20.99	21-25	25+
$75,000+	1	1	1	0	0	0
$50-74,999	2	2	2	1	1	1
$30-49,999	3	3	3	2	2	2
$22-29,999	4	4	4	3	3	3
$20-21,999	6	6	6	5	5	5
$18-19,999	7	7	7	6	6	6
$16-17,999	8	8	8	7	7	7
$14-15,999	9	9	9	8	8	8
$13-13,999	10	10	10	9	9	9
below $13,000	10	10	10	10	10	10

10 Possible Points

Section III: Bonus Points

1. Existence or planned acceptance of a major state institution or facility including but not limited to state and county prisons, mental health facilities, regional solid waste facilities, and federal and state military reservations; institutions of public high learning are excluded. Up to 10 points will be awarded on how well the community cooperates with existing facility or facilities. Automatic 10 points for agreeing to the siting of a facility in community; and/or

2. Debt limit override votes for open space purchase(s) in the preceding two years. Automatic 10 points for override votes in each of the two preceding years; five points for override vote in one of the two preceding years.

Range Possible 0-10

Subtotal: 10

Chapter 2 - Planning for the Protection of Our Resources

In planning for the 1988 Statewide Open Space and Outdoor Recreation Plan, the Technical Advisory Committee wanted to produce a document that was not only informative, but usable to a wide variety of state and local officials. This section of Volume Two presents information on legislation and state programs; a "how to get involved" section on the state Geographic Information System (GIS); a how to gain access to supply and demand data; and a variety of tables and charts, all of which can help state and local officials in their planning and management efforts.

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Environmental Resource Protection Tools in Massachusetts

The following state level regulations, planning grant programs and technical assistance programs provide many of the tools necessary to ensure that critical environmental resource areas are protected from or enhanced by development. A brief description of each tool is provided to be used as a starting point. This is an evolving document and therefore, may not reflect the most current information.

General Resource Protection

Massachusetts Environmental Policy Act (MEPA). MGL Chapter 30, Sections 61-62. MEPA is an interdisciplinary program which examines environmental impacts of major new developments. The MEPA process is triggered when a developer files an Environmental Notification Form. MEPA is required to make a finding on all projects reviewed in which the agency may require that the most environmentally sensitive mitigation solutions be employed by the applicant. Any project which requires Commonwealth approvals of any kind or will receive funding from any public program and which exceeds a set of filing thresholds in the MEPA regulation, must be reviewed by MEPA.

MEPA's primary regulatory tool is the **Environmental Impact Report** prepared in accordance with the Act, which provides that no agency, department, board, commission or authority of the Commonwealth shall commence any work project activity which may cause damage to the environment until 60 days after it has published a final environmental impact report.

Areas of Critical Environmental Concern (ACEA). The Secretary of Environmental Affairs may designate ACECs for coastal or inland natural areas of regional or statewide significance. (MCZM administers coastal ACECs and MEPA, inland ACECs.) The designation reduces the MEPA threshold to zero, meaning that all proposed projects within an ACEC zone must be reviewed by MEPA. No proposed uses or development are allowed which might environmentally degrade the area. Eligible areas must include features from four or more of the following groups: fishery habitat, coastal features, estuarine wetlands, inland wetlands, inland surface waters, water supply areas, natural hazard areas, agricultural areas, historical/archaeological resources, rare habitat resources, special use areas. Applications for ACEC designation may be submitted by ten local citizens, any state agency, regional planning agency, conservation commission or the Governor. A public hearing is held prior to a designation decision made by the Secretary of Environmental Affairs.

Conservation Restrictions. MGL Chapter 184, Sections 31-33 allows "restrictions" to be placed on a deed in perpetuity by which an owner of real property agrees to keep the land in a predominantly open, natural or scenic condition. The holder of the restriction may restrict or forbid construction of buildings without qualification and may limit soil or mineral removal. The restriction may be donated or purchased by any governmental body or private charity. The landowner is eligible for tax breaks only if the parcel is five acres or greater in area. EOEA keeps records of all transactions.

Massachusetts Self-Help Program. MGL Chapter 132A, Section 11 is administered by the Division of Conservation Services. This program offers towns up to 90% reimbursement for the cost of land purchased for conservation or passive outdoor recreation. Resources protected via land and water purchases, may include reservoirs, watershed areas, trails, beaches, wetlands, archaeological sites and farmland.

Massachusetts Urban Self-Help Program. Chapter 933, Acts of 1977 is administered by the Division of Conservation Services. This program provides funds to municipalities with populations of 35,000 or greater; or to a town under 35,000 with a regional or statewide facility; or special small grants of up to 50,000 to towns under 35,000 to acquire and or develop land for municipal park and recreation purposes whereby the state would provide up to 90% of the cost.

Federal Land and Water Conservation Fund. This is a federally funded program designed to reimburse cities and towns up to 50% of the total project cost to acquire and develop park and recreation and conservation land.

Bay Circuit Program. MGL Chapter 631, Acts of 1956 and Chapter 233, Acts of 1984 is administered by DEM's Division of Planning. The objective of the program is to create a 100-mile continuous network of open space and park land surrounding Boston in 50 communities. The program has provided planning grants to communities to help them identify the location of the Bay Circuit route locally. The Bay Circuit Program has acquired four properties which enhance this linked system of parks. Other acquisitions are anticipated. The program provides technical assistance to these communities on general land protection/conservation techniques.

Acquisition of Land to Protect and Enhance State Parks. MGL Chapter 564, Section 12, is administered by the Department of Environmental Management and provides for the acquisition of land adjacent to existing protected open space and for the acquisition of new state parks. Projects are funded on their statewide or regional significance in terms of natural resource protection, enhanced recreational provision, and solutions to existing management problems. Due to limited funding resources and the high cost of land, DEM has chosen to undertake a number of cooperative ventures with other agencies and nonprofit groups.

Acquisition and Development of Statewide Trails. MGL Chapter 138 and 138A provide authorization for a wide range of trail development and protection activities. Chapters 723 and 564 provide authorization and funding. The focus of the program has been on the protection of long distance pedestrian trail corridors as greenways linking DEM properties and other public and nonprofit conservation land. In addition DEM has also acquired and developed surplus railroad right-of-ways for bicycle, motorized, equestrian and pedestrian recreation. The Trails Program also works with cities and towns in integrating long distance trails into local open space planning, as well as offering technical assistance in trail related land protection projects.

Acquisition of Land for Reservations. MDC administers this acquisition program which provides for the purchase of additional park land in the Metropolitan Park District. The MDC is particularly interested in lands which round out MDC holdings along Boston Harbor coastline and to enhance existing reservations.

Open Space Planning Grants/Division of Conservation Services. Grants awarded through conservation districts to towns range from $750-$2,000 for the development of open space plans. Six regional districts receive $10,000 each annually, to distribute among applicant communities.

Bikeways Program/Department of Public Works. This program provides funding for the development of bikeways and the provision of bicycle parking facilities. Regional bikeways are 100% funded and often utilize DEM to oversee design and construction. Local bikeways are funded 75% by the state and 25% by local. The local share can be made up of in-kind services such as designing the project. Bicycle parking is funded 50% state and 50% local.

Open Space Program/Department of Public Works. This program purchases land or rights in land adjacent to public ways for the purpose of restoring, preserving, or enhancing areas of scenic beauty or special environmental value. The DPW makes fee simple acquisitions or purchase scenic/conservation easements. Cooperation with local, state and nonprofit land conservation organizations is necessary to accomplish this task. The program is the only scenic highway program in the country with an allocation of funds.

Public Access Board. MGL Ch. 723, and Ch. 564 Section 30 provide funding through DFWELE to the Public Access Board for acquisition and development of areas which provide public access, by canoe or by boat, to the ponds, lakes, rivers, streams, and tidewaters of the Commonwealth.

Wetlands

Presidential Executive Order 11990. This executive order requires Federal agencies to avoid undertaking or providing assistance for new construction in wetlands unless there is no practicable alternative to such construction and that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use.

Governor's Executive Order 149. This executive order designates the Water Resources Commission to assist in the implementation of the National Flood Insurance Program and requires State agencies to avoid, to the extent possible, construction of structures in the floodplain and the awarding of grants or loans to projects involving construction in the floodplain.

Massachusetts Wetlands Protection Act. MGL Chapter 131, Sec. 40 is administered primarily by local conservation commissions. It prohibits any person from removing, filling, dredging or altering any wetland without first obtaining an Order Of Condition (permit) from the conservation commission. The commission may regulate such activities to protect: public or private water supply; ground water supply; flood control; storm damage prevention; prevention of pollution; land containing shellfish and fisheries and wildlife habitat.

River and Harbors Act of 1899. Under Section 9, 33 U.S.C., Section 401, any dam or dike across any navigable water requires Congressional consent and plan approval by the U.S. Army Corps of Engineers. Where the navigable portions of the waterbody lies wholly within the limits of a single state, the structure may be built under legislative authority of that state.

Section 13, 33 U.S.C., Section 407, provides for regulation of discharge of refuse into navigable waters. In absence of a permit, such discharge is prohibited.

Clean Water Act, Section 404. The Corps of Engineers must issue comprehensive permits for the discharge of dredged or fill material in most U.S. waters and adjacent wetlands with some exceptions. The Corps will not authorize a project until all local and state approvals have been made. EPA may restrict or prohibit the use of areas as disposal sites when discharge will have an adverse effect on municipal water supply, shellfish beds and fishery areas, or wildlife and recreational areas.

The projects that the Corps reviews and has impact on are generally large in scale. It may be useful to consider the adoption of a state general permitting program which would allow the Commonwealth to monitor and control the smaller dredging and filling projects as well as review alternative solutions.

In Massachusetts, amendments could be made to the Wetlands Protection Act to expand interests protectable under the statute to include the wide range of wetland values protected by the Corps, including recreation, aesthetics, agriculture, historical landmarks and the public interest generally.

Presidential Executive Order 11988. Written justification is required for a project proposed to be located in a floodplain where Army Corps of Engineers permits or other federal activities are required. Actions must conform to state and local floodplain protection standards.

Inland Wetlands Restriction Act. MGL Chapter 131, Section 40A is administered by DEQE's Division of Wetlands and Waterways. The commissioner, in order to preserve and promote the public safety, private property, wildlife, fisheries, agriculture, water resources and floodplain areas, is directed to issue orders restricting or prohibiting development of inland wetlands. Orders must be reviewed by the local selectmen or city council. The Commissioner may override local disapproval of the restriction after a period of six months has passed.

Designation by DEQE places restrictions on private properties in perpetuity without compensation to the landowner. The majority of existing inland restrictions are located along the Charles River Watershed and were established through the assistance of the Corp's Natural Valley Storage Area project.

Coastal Wetlands Restriction Act. MGL Chapter 130, Section 105 is administered by DEQE. The Commissioner is authorized to restrict or prohibit dredging, filling removing or otherwise altering or polluting coastal wetlands (defined as any bank, marsh, meadow, flat or other lowland subject to tidal action or coastal storm flowage and such contiguous land as the Commissioner deems necessary to affect by the order).

National Flood Insurance Program. The Federal Government, through the Federal Emergency Management Act (FEMA), makes flood insurance available for sale in those communities which chose to participate in this program. To participate, communities must adopt a local bylaw regulating the use of the floodplain. As part of this program, FEMA has mapped the boundaries of the 100-year floodplain for most of the communities in the Commonwealth. DEM's Division of Water Resources, through its Flood Hazard Management Program, works with FEMA to assist in the implementation of the program and to provide technical and mapping assistance to municipalities in Massachusetts.

Tideland

Chapter 91 Program. MGL Chapter 91, Section 5 regulations are administered by the DEQE Division of Wetlands and Waterways. The Division may grant five year licenses for the displacement of tidewater by any structure below high water mark. The filling of flat requires compensation either by excavation, harbor improvement or a fee based on water displaced. Bridges (replacement or new) are exempt from the regulation. Amendments made in 1983 require that "public benefits" must outweigh costs. The requirement for public benefits pertains to projects in Commonwealth tidelands as well as to non water-dependent projects in private tidelands. It has been held that land below the low water mark must be used for statutory public purposes.

Sections 30 and 30A provide that DEQE may bar removal of material or vegetation in tidal areas if likely to injure waters or cause upland erosion.

National Estuarine Research Reserve Program. This is a federal/state cooperative program designed to promote education and research of estuarine systems nationwide. In Massachusetts the Waquoit Bay estuary and surrounding upland areas have been designated a National Estuarine Research Reserve under this program. The Reserve encompasses the DEM-owned properties of South Cape Beach, Washburn Island and the Swift Estate. While recreation activities are allowed within Reserve boundaries, the major purpose of the Reserve Program is to promote knowledge of estuarine systems and to assist coastal resource decision-making nationwide.

State Oceans Sanctuary Program. MGL Chapter 132A, Sections 13-18 mandate restrictions on activities within the following designated sanctuaries: Cape Cod, Cape Cod Bay, Cape and Islands, North Shore and South Essex. The Act prohibits dumping, excavation and dredging, and new or increased sewage discharge.

Barrier Beaches. These areas receive special protection under Governors' Executive Order #181, and have been given priority status for Self Help and other state and federal acquisition programs. No state or federal funds can be expended for construction projects and no development shall be permitted in the velocity zones or primary dune areas identified by DEQE. MCZM coordinates state agency management policy for barrier beach areas.

Technical Assistance. DEQE, DEM, DFWELE, MDC, DFA, DCS and MCZM will provide municipalities with planning, regulatory and legal advice (i.e., will provide coastal wetlands delineations or determine shoreline erosion rates).

Aquifer/Watershed Areas

Federal Safe Drinking Water Act. 42 U.S.C., Section 300h, authorizes EPA to designate aquifers as sole or principal drinking water sources for a geographic area. After such designation no Federal agency may provide financial assistance to projects which EPA determines may contaminate the aquifer so as to create a significant hazard to public health, without express authorization of the project and designing precautions to avoid contamination. Such an aquifer exists on Cape Cod and Nantucket.

Interbasin Transfer Act. The Massachusetts Legislature enacted the Interbasin Transfer Act (Chapter 658, Acts of 1983), giving the Water Resources Commission the authority to approve or disapprove any significant (over one million gallons per day) transfers of surface and ground water, including waste water, outside a river basin. Pursuant to the Act, the Water Resources Commission promulgated regulations (313 CMR 4.00) defining and delineating the river basins of the Commonwealth, and establishing application procedures and criteria upon which the Commission shall base its approval or disapproval of any proposed interbasin transfer.

Anti-Degradation Program. 314 CMR 4.00 grants DEQE's Division of Water Pollution Control jurisdiction over the quality of Commonwealth's waters. DWPC reviews all projects where a discharge permit is being requested to allow the release of effluents into a water system.

DWPC has classified all waters in the state into three categories, each of which has different water quality standards. Those water bodies which have been designated "high quality" cannot be degraded below their classification standard (either Class A which is drinkable or Class B which is fishable/swimmable) unless a variance is given. Designated "low flow" waters are generally small or intermittent streams. No new or increased discharge is allowed in these areas unless a variance is granted.

Variances are usually only granted if reasonably available alternative means of disposal are not feasible. The greatest level of protection is afforded by the "waters of national interest" designation. Those areas in Massachusetts are the North and South rivers and the areas in and abutting the Cape Cod National Sea Shore. This last classification allows no variances and no new discharges. Existing discharges are being eliminated unless the quality as a national resource will not be affected or there are no alternatives. DEQE is revising their classifications this year.

Surface Water Permits. MEPA regulations (10.32) require any proposal for a surface drinking water source must include the preparation of an Environmental Impact Report (EIR). Any groundwater source which will produce five or more million gallons of water per day must also file an EIR.

Ground Water Discharge Permits. Chapter 21, Section 7 grants DEQE's Division of Water Pollution Control the authority to permit all discharges into the ground. Control of the discharge of pollutants to the groundwaters of the Commonwealth is aimed at ensuring that "these waters are protected for their highest potential use."

Water Management Act. MGL Ch 21G authorizes the DEQE to manage water withdrawal from the state's surface and ground water supplies for current and future water needs. It also gives DEQE greater authority to act in and oversee water supply emergencies. The purpose of the Water Management Act is to comprehensively manage both surface and ground water of the Commonwealth as a single hydrologic unit.

The Act became effective March 1986. DEQE adopted registration regulations which requires registration of all water withdrawals over 100,000 gals/day on average between 1981-1985. Registration was completed by DEQE in January, 1988. The purpose of registration is to gather historical water withdrawal information and to grandfather certain previously existing withdrawals.

Anyone who plans to withdraw over 100,00 gals/day on average must obtain a permit under the Act. DEQE is permitting river basin by river basin. DEM's Division of Water Resources is preparing hydrologic studies and river basin plans according to DEQE's schedule to assist in the permitting process.

DEQE Division of Water Supply. Chapter 111, Section 17 stipulates that DEQE approval is required for any proposed system of water supply, drainage or sewage. DEQE may, after a public hearing require a town, person, district or water company to make improvements to any existing treatment, works or system of water supply which is judged to be "necessary for the protection of public health."

Chapter 111, Section 160A states that DEQE must "ascertain" a drinking water source's "purity and fitness for domestic use", or the possibility of "impairing the interests of the public" or of "imperilling the public health."

Reservoir Site Acquisition. The Reservoir Site Acquisition Program is administered by the Water Resources Commission to acquire land and water to protect and conserve future water impoundment sites for the purpose of flood control, low flow augmentation, and municipal water supply. To date, (Summer, 1988) the following communities have been the beneficiary of this program: City of Newburyport, 1981; the Salem and Beverly Water Supply Board, 1983; and the Abington and Rockland Joint Water Works, 1984. The towns of Danvers and Middleton have acquired property for the Emerson Brook Reservoir but have not yet requested reimbursement. The City of Brockton's plans to acquire property in Kingston, along Pine Brook, have been put on hold. In addition, a bill has been proposed which would fund the acquisition of land within the watershed of existing reservoirs.

Landfill Capping Grant Program. DEQE Division of Solid Waste provides 80% funding to cap landfills with impervious materials to control the travel of leachate to drinking water supplies. These grants must be tied to active and passive recreational uses.

Aquifer Land Acquisition Program. MGL Chapter 723 and MGL Chapter 286 provide funding through DEQE Division of Water Supply, to purchase lands in the primary area of contribution (Zone II) of public water supplies. Grants pay 100% for investigative studies up to $50,000. The program reimburses for the entire costs of an acquisition of land or easements, with a maximum grant of $500,000 available per project. The Division also provides general information on water supply issues to the public.

Watershed Lands Acquisition Program. MGL 564 Section 3 provides funds for the acquisition of watershed lands to protect the quality of water resources in the Quabbin, Ware, Wachusett, and Sudbury watersheds. This is a cooperative effort between the Department of Fisheries, Wildlife and Environmental Law Enforcement and the Metropolitan District Commission. Priority areas have been identified and negotiations with landowners have begun.

Clean Lakes Program. DEQE's Division of Water Pollution Control provides funding to address the problems of eutrophication of publicly owned lakes and ponds used for recreational purposes. The program provides 70% state to 30% local matching grants for studies and 75% state to 25% local for implementation. The program began in 1983 and was given $3 million per year for ten years.

Watershed Management. MDC's Division of Watershed Management maintains a constant overview of water quality within all of its watershed areas and watchdogs the violation of any state laws protecting the public drinking water supply. The Division has the right to inspect any sanitary facilities within the MDC watershed areas (including landfills) and inspects residential septic systems annually. The Division of Watershed Management administers the acquisition dollars.

Rivers

Scenic and Recreational Rivers Act. The Massachusetts Scenic and Recreational Rivers Act was established in 1971 by MGL Chapter 21, Section 17B, to protect the Commonwealth's irreplaceable wild, scenic and recreational river resources by giving DEM authority to impose protective orders regulating all development within a 300' corridor on either side of rivers classified within the system. Classification is effective but sometimes requires years of work to receive local approval at town meetings, especially where many communities along a river corridor are involved. The act is implemented through the DEM Rivers Program.

Rivers Program. Through technical assistance and a greenway grants program to watershed associations, regional planning commissions, and other private environmental/conservation groups, the DEM Rivers Program effectively aids communities in developing innovative protection strategies and techniques that will protect river resources while accommodating legitimate recreation, economic and energy development.

Riverways Programs. Through the Department of Fisheries, Wildlife and Environmental Law Enforcement, two statewide programs, Adopt-a-Stream and the Small Grants Program, focus on generating and supporting local involvement in permanent river corridor protection. Efforts include funding surveys of land ownership along the river corridor, studies of local options for abating water quality problems, and technical assistance in growth management techniques. Both programs work closely with the Department's land acquisition program to identify lands for acquisition by DFWELE to extend river corridor protection. Two river basins, the Assabet and the Blackstone, are receiving special attention and have full-time planners working with organizations in those basins to protect the river corridor and associated natural resources.

Connecticut Valley Action Program. MGL Chapter 723, Section 9B is administered by DEM and provides for the acquisition of land fronting on the Connecticut River for conservation and recreation purposes. The project also includes a larger comprehensive planning component which seeks to protect the character of the valley in a broader sense and includes the implementation of several growth management techniques. The program received $2 million in the 1983 Open Space Bond and an additional $12 million in 1987. DEM's Connecticut Valley and Bay Circuit Programs; and DFWELE's Riverways Programs are EOEA funded programs which provide technical assistance to communities on growth management issues. These programs foster the protection of natural resources and town character through their grants and outreach efforts. Their primary goal is the development of corridors of linked open space systems known as greenways and riverways.

Farmington River Acquisition. MGL Chapter 723, Section 91, provides for the acquisition of land along the Farmington River for preservation of a wilderness corridor, protection of water quality, and provision of recreational opportunities. Land acquisition efforts are administered by DEM and DFWELE jointly. A Protection/Acquisition Plan has been completed and land acquisition activities are likely to continue into the 1990s.

In recognition of the excellent work done by the Hartford, CT, Metropolitan District Commission in protecting the southern reaches of the Farmington River corridor, and the scarcity of land available for acquisition, the Legislature included in the MGL 564, Section 49 an amendment to the language of this appropriation. This account may now also be used to acquire land along urban rivers of the commonwealth, enhancing the ability to protect important resources where previously there was no authority to acquire and protect land.

General Acquisition Programs. The Department of Fisheries, Wildlife and Environmental Law Enforcement may purchase properties along major rivers, cold water streams, for protection of rare or endangered species habitat, or lands adjacent to existing conservation land. A major objective of this program is to acquire lands, especially along rivers, which serve to link existing open spaces creating corridors of protected land, which are of critical importance to wildlife.

Coastal Facilities

Coastal Facilities Improvement Program. MGL Chapter 589, Acts of 1983 is administered by Coastal Zone Management and provides funding to improve maritime-dependent coastal facilities including waterfront park construction, docks, piers, parking areas, boat ramps and historic structures. Towns share the cost on a 50-50 basis.

River and Harbors Act of 1899. Under Section 9, 33 U.S.C., Section 401, any dam or dike across any navigable water requires Congressional consent and plan approval by the U.S. Army Corps of Engineers. Where the navigable portions of the waterbody lies wholly within the limits of a single state, the structure may be built under legislative authority of that state.

Section 13, 33 U.S.C., Section 407, provides for regulation of discharge of refuse into navigable waters. In absence of a permit, such discharge is prohibited.

Clean Water Act, Section 404. The Corps of Engineers must issue comprehensive permits for the discharge of dredged or fill material in most U.S. waters and adjacent wetlands with some exceptions. The Corps will not authorize a project until all local and state approvals have been made. EPA may restrict or prohibit the use of areas as disposal sites when discharge will have an adverse effect on municipal water supply, shellfish beds and fishery areas, or wildlife and recreational areas.

The projects that the Corps reviews and has impact on are generally large in scale. It may be useful to consider the adoption of a state general permitting program which would allow the Commonwealth to monitor and control the smaller dredging and filling projects as well as review alternative solutions.

In Massachusetts, amendments could be made to the Wetlands Protection Act to expand interests protectable under the statute to include the wide range of wetland values protected by the Corps, including recreation, aesthetics, agriculture, historical landmarks and the public interest generally.

Acquisition and Development of Land for Public Access to Coastal Beaches. MGL Chapter 564, Section 19 allows for increased public access to coastal areas through acquisition of coastal property by DEM. The goal of the program is to protect, conserve and enhance the fragile natural and scenic resources which comprise the coast, and to ensure access to the coastline by Massachusetts residents for both passive and active recreation.

The Boston Harbor Islands. MGL Chapter 742, Acts of 1970 provides for park development of the Harbor Islands and is administered by DEM. An updated masterplan has been developed to guide the next ten years of improvement. Through a combination of acquisition, development and joint management, the Park is expected to accommodate 600,000 visitors per year.

Boatyard Preservation Restriction Program. MGL Ch. 564 section 7 calls for a new program, administered through Coastal Zone Management, which acquires the development rights to currently operating boatyards in coastal areas.

Critical Habitats

Natural Heritage and Endangered Species Program. Administered through DFWELE, the program protects critical natural areas through: determination of the potential impacts of development to habitats of rare wetlands wildlife under the state's wetlands protection law; review of environmental impacts and threats to all significant rare species sites by various types of development and incompatible land uses; notification of land managers of rare species that occur on publicly-owned lands; recommendation of land acquisition priorities to towns, other agencies, and private conservation groups; and acquisition of land to protect critical habitats.

Primary funding for the Natural Heritage and Endangered Species Program comes from voluntary contributions on the state income tax forms. Citizens who are receiving refunds may contribute part, or all of their refund to the Nongame Wildlife Fund, or they may add a contribution to their tax.

DFWELE Acquisition Programs. MGL Chapter 564, section 29 empowers the Department of Fisheries, Wildlife and Environmental Law Enforcement to acquire land to protect important wildlife habitat along rivers and streams; to develop wildlife corridors; to preserve rare or endangered species; and to enlarge existing protected open space holding whether owned by the Commonwealth, a community or a private nonprofit organization. The Department strives to acquire wildlife habitat in all regions of the Commonwealth, but in recognition of the critical importance of our coastal resources, twenty percent of the available funds for land acquisition will be expended in the coastal zone.

Cultural/Historic Resources

National Register of Historic Places. The National Register of Historic Places (NRHP) is the nation's official list of buildings, districts, sites, structures and objects important in American history, culture, architecture and archaeology. The NHRP is administered by the National Park Service and the Massachusetts Historical Commission (MHC). NRHP status places no constraints on what owners may do with their property when using private funds. While the NRHP is not a design review program, it does provide limited protection from state and federal actions. It is the eligibility basis for matching state and federal grants for acquisition, restoration and research projects and certain federal tax benefits for certified rehabilitation projects. (National Historic Preservation Act of 1966, 16 USC 470; 36 CFR Part 60)

State Register of Historic Places. The State Register of Historic Places serves as a master list of designated historic properties in Massachusetts and provides protection to these properties. Properties are included on the State Register if they are: listed or determined eligible for listing in the NRHP, local historic districts, local, state and national landmarks, state archaeological landmarks or properties with preservation restrictions. The MHC reviews any project funded or licensed by state agencies affecting properties listed in the SRHP. In addition, the MHC and MEPA work closely to ensure that all projects requiring MEPA review meet the requirements under the State Register review process. Other agencies, such as the Division of Conservation Services, have adopted policies to incorporate historic resources into their project planning process. (M.G.L., Ch. 9, ss 26-27C; 950 CMR 71)

Environmental Review and Public Planning. The MHC acts as a liaison to federal, state and local development agencies. The MHC is authorized by state and federal law to review and comment on certain state and federally licensed or funded projects that have an impact on historic properties. The MHC review authority is provided by the National Historic Preservation Act, the State Register review process and the MEPA review process. If it is determined that the project poses a threat to a historic property within the proposed project impact area, then project proponents and the MHC jointly explore alternatives to eliminate or minimize any damaging effects.

Archaeological excavations on public lands are overseen by the State Archaeologist, whose permits insure that these important resources are properly conserved. Furthermore, the State Archaeologist reviews development projects affecting archaeological resources and negotiates protective solutions. (NHPA, 16 USC 470, Section 106; 36 CFR Part 800; M.G.L. Ch. 9 ss 26-27c; 950 CMR 70; 950 CMR 71.)

Historic Preservation Tax Act Certification Program. This federal tax incentive program encourages private investment and rehabilitation of historic properties and promotes the preservation of local historic sites. Owners of National Register buildings in commercial, industrial, or rental residential uses qualify for 20% Investment Tax Credit, in effect a 20% rebate based on rehabilitation costs. These credits help pay for the unique costs associated with the rehabilitation of historic properties and have convinced otherwise skeptical investors of the value of historic buildings. (Tax Reform Act of 1986 [P.L. 99-514]; Economic Recovery Tax Act of 1981 [P.L. 97-34]).

Local Historic Districts. A Local Historic District is established and administered by a community to protect the character of important areas, and encourage new structural designs that are compatible with the locality's historic setting. Once a local district is established, a commission may be appointed to review all applications for exterior changes to buildings within the district. Review criteria are determined by each city and town and vary for each local district. LHC regulations are utilized to control demolitions and exterior alterations of significant buildings and structures. (M.G.L. Ch. 40C)

Inventory of Historic and Archaeological Assets of Massachusetts. MHC policy requires local Historical Commissions to complete their town survey before nominating properties to the National Register or applying for grants administered by the MHC. The inventory is the basis of local preservation, a component of the Commonwealth's historic preservation plan and is considered in all statewide comprehensive planning.

Statewide Reconnaissance Survey Program. In 1980, MHC began a comprehensive planning effort to supplement the site-specific information being gathered locally with a broad overview tracing development patterns in the state in order to formulate a broad context for evaluating the significance of historic and pre-historic properties. The products of this nationally known, innovative program are reports on each of the state's 351 communities, as well as regional overviews whose geographic boundaries roughly adhere to county lines.

Certified Local Government Program. The Certified Local Government (CLG) program was initiated by the federal government to guarantee that at least 10% survey and planning funds are allocated to local communities, and that those communities meet the federal criteria for preservation funding. Communities that have enacted historic preservation legislation are eligible to apply to MHC for certification. Additionally, CLG status allows communities to participate directly in the review and approval of National Register nominations. (NHPA of 1980; 36 CFR Part 61)

Massachusetts Preservation Projects Fund. State funds are available for the restoration, rehabilitation, stabilization and documentation of historic and archaeological properties owned by municipalities or nonprofit organizations. Through this fund 50% matching grants are available to qualifying proprieties listed in the State Register of Historic Places to ensure their physical preservation. Applicants may choose to apply for up to 75% of the total project cost if they are willing to commit an additional 25% toward an endowment fund for long-range preservation and maintenance of the property.

Strategic Planning Grants Program. In the context of a strong state economy, many communities are finding it difficult to manage the growth and development pressures they are now experiencing. EOCD awards Strategic Planning Grants to enable a single or group of communities to better plan for their growth. This program provides grants to plan housing, infrastructure and economic development together with the protection of natural and cultural resources. This program has been successful in introducing innovative planning techniques such as inclusionary zoning, cluster development, alternatives to moratoria, and resource management zoning.

Massachusetts Incentive Aid Program. EOCD's Incentive Aid Program is a management improvement program for municipalities and school districts. In recognition of the increasing growth pressure on Massachusets cities and towns, the programs offered have been expanded to include a land-use management initiative. It is designed to aid local departments performing regulatory and inspection duties which relate to land management. The program provides grants for increased staffing, management training, and service operation and management improvements.

"Land-Use Management" Publication. EOCD provides this monthly publication addressing land management activities addressed in the state's zoning enabling act and state subdivision control law. Topics addressed grow out of questions repeatedly asked through the HotLine maintained by EOCD to answer local questions about state statutes and local bylaws/ordinances.

Regional Planning Agency Grants. Twelve of the 13 planning agencies submit annual program proposals to EOCD for review and approval. Current work activities include planning for land conservation topics such as regional water supply/demand, water quality protection, agricultural impact, wetland protection, sewer regulations and land bank administration.

Technical Assistance. EOCD provides technical assistance and advice on development projects and proposals to local and regional entities on a wide range of development issues including ones that relate to land conservation such as agricultural development (considered as an industry). This process has worked to enhance working partnerships and development with significant public benefit.

Integrated Pest Management. The Department of Food and Agriculture's Pesticide Board administers this program which intends to minimize pesticide use in the Commonwealth through the use of biological and cultural controls. The program receives $250,000 per year from the annual budget. It funds the University of Massachusetts in Amherst to provide IPM consultation and services to growers of a variety of good crops and provides grants for biological control studies.

Community Gardens. In both rural and urban areas, the Department of Food and Agriculture assists gardening groups whose main purpose is to develop and cultivate land to produce food. The Department arranges leasing of state lands for gardening.

Massachusetts Seed Program. DFA provides free seeds to community groups and organizations of low income gardeners statewide.

Fruition Program. Nonprofits and municipalities may participate in DFA's program which promotes the planting of fruit and nut trees on public access lands.

State Farmland Leasing Program. This program, administered by the Department of Food and Agriculture, makes state owned lands available for farming on a five year, renewable lease basis. The program coordinates with all state agencies which manage farmland.

Technical Assistance. DFA provides assistance on the implementation of chapter 61A, leasing of municipal agricultural land, starting a community garden, agricultural land preservation strategies and agricultural overlay zoning.

Growth Management Techniques

Regional Planning through Department of Public Works. The Massachusetts DPW funds regional transportation planning through contracts with regional planning agencies (RPAs). The RPAs work directly with member municipalities in the conduct of studies of corridors and spot locations adversely affected by growth. Aside from the recommendations made through these studies for improved highway geometrics and general physical betterment, many studies produce recommendations for consideration by the municipalities regarding the management of growth.

Curb-Cut Policy. DPW is clarifying and strengthening its existing curb-cut policy to ensure that decisions to grant access to state highways preserve the safety and capacity of the regional traffic system and minimize any traffic and related environmental impacts.

Prospect Cape Cod. The objectives of this program, within the Executive Office of Economic Affairs, include the facilitation and provision of technical assistance to a task force whose intent is the development and implementation of a practical and realistic regional plan to protect the quality of life on Cape Cod. A variety of growth management techniques will be used.

Massachusetts Small Cities Program. This EOCD grant program assists localities to restore residential neighborhoods, revitalize commercial districts, and provide greater opportunities for low-to-moderate income persons. This program can be used to promote land conservation in two ways; public facilities maintenance/expansion and local planning. Since its inception this program has resulted in the restoration or replacement of 6,500,000 miles of water lines, the laying of over 4,000,000 miles of sewerage and drainage pipes, and the creation or restoration of 39 parks.

Feasibility Study Program. This EOCD program makes grants of up to $30,000 for smaller cities and towns to study site-specific economic development projects. Products include planning analysis, maps, and recommendations on development feasibility and procedure. Studies include engineering and architectural studies, financial analysis, infrastructure analysis, and assessment of environmental constraints.

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The Geographic Information System (GIS)

Executive Office of Environmental Affairs (EOEA)

EOEA is committed to the development and implementation of a Geographic Information System (GIS) to support the work of its offices and agencies. GIS equipment will be procured and installed on a mini-mainframe computer as part of a major effort to modernize and improve the EOEA Data Center. The Mass GIS database will be copied from the USGS (U.S. Geological Survey) computer to the EOEA computer at the beginning of 1989.

Initially, the GIS will be used to assist EOEA agencies in updating and automating their data and establishing major agency applications. As a result, EOEA will not be able to make GIS capabilities widely available to a broader group of people. EOEA will, however, be in a position to distribute its digital data to groups that implement GIS on their own.

An important part of the implementation of this system is a long term strategy to insure the quality, currency and completeness of the database. The ten data layers developed by MassGIS is just the beginning, several other data layers will be needed to provide a useful database for the many offices and departments of EOEA. Data layers; such as flood plains, wetlands and soils; are required by many state programs. Ongoing work and support will be required to begin the process of expanding the database.

Critical policies must be developed regarding the responsibility of maintaining the core data layers. This responsibility should be delegated to agencies by topic. For example: the DEQE Division of Water Supply should retain responsibility for mapping the public water supply data layer. The Departments of Environmental Management, Fisheries, Wildlife and Environmental Law Enforcement and the Metropolitan District Commission should work cooperatively to maintain the public open space data layer. The DEQE Division of Water Pollution Control should be responsible for maintaining the location of all discharge permits (NPDES). Once these responsibilities are delegated EOEA will move forward to set other policies such as timetables for updating. Procedures will then be developed by the GIS technical staff for incorporating these changes into the comprehensive database.

Clear policies will help insure that the resources required for updating and expanding the data are made available. The improved access to, and output capabilities for data provided by a GIS means that data will be more frequently used and scrutinized. No longer will data errors be hidden in long columns of numbers or in old file cabinets, instead they are illustrated in color. Creating a GIS forces data quality to be addressed during development. The intensity of data use through a GIS requires that maintenance mechanisms be created and implemented.

EOEA's programs require up-to-date information to adequately address their mandates. EOEA spends a lot of money generating new environmental data. The GIS will help organize, maintain and provide that information to state programs and the public. In order to keep this system working into the future a concomitant commitment of resources for data maintenance is required. As the system matures, data maintenance mechanisms implemented and GIS capabilities are integrated into daily activity, EOEA can spend more effort distributing GIS capabilities and products.

Departments of Environmental Management and Fisheries, Wildlife and Environmental Law Enforcement (DEM AND DFWELE)

DEM and DFWELE's GIS effort has focused on the development of the comprehensive, statewide, public open space data layer. This case example illustrates both some of the planning required to make a GIS project work as well as some of the benefits the technology can offer to a program.

In 1987 the Governor and Legislature passed a new open space bond in excess of $500,000,000 to enhance and protect the environment. Significant planning is required to insure that this money is wisely spent to enhance public amenities and protect threatened natural and cultural resources.

Initial planning discussions relate the desirability of 1) preserving and protecting the resources most in need of protection, 2) procuring open space that would connect existing open space thereby protecting large areas that could support a range of recreation activity and a diversity of plant and animal habitat, and 3) procuring open space that also protects natural resources such as watershed lands, aquifer recharge lands or endangered species habitat.

Data problems emerged immediately. First, there is no comprehensive list of all currently protected open space. Each agency, each municipality and each organization has their own information mapped, but no single source is available showing all protected land. The most comprehensive data base (unmapped) is the 1988 SCORP inventory of open space and outdoor recreation facilities, recording over 11,000 sites statewide.

Second, comprehensive natural resource data was not assembled in a single place and traditional mechanisms for combining these data to test evaluation criteria were very time consuming and implementation difficult.

Finally, with the new money distributed between five environmental departments, with no data centralization, and five independent efforts to locate and procure new lands, agencies are more likely to duplicate efforts and "reinvent the wheel."

Cooperative Efforts

EOEA's growing GIS effort and the emergence of these problems led the Departments of Environmental Management and Fisheries and Wildlife to examine the feasibility of incorporating GIS in their open space acquisition programs. It was decided that the most useful product that could be developed would be a comprehensive statewide public open space data layer. This data could be used immediately to address the 'linkage' criteria of new open space acquisitions. Additionally, the new digital data layer could be efficiently overlayed with existing digital data (such as surficial geology, hydrography and public water supplies) residing in the MassGIS system to address criteria pertaining to protecting public water supplies and other natural resources.

Not only would this digital data layer and associated attribute database be useful to targeting new acquisitions but also it would remain a valuable tool to the agencies for managing their current holdings. Most importantly though, the new digital data layer would be a single recognized resource, containing comprehensive, up-to-date information on the location of precious protected lands. This resource would be available to all EOEA agencies (open space is an important criteria in the siting of hazardous waste treatment facilities, etc.) and would minimize the problems of incomplete and inconsistent open space maps.

The process of creating this data layer is ongoing, and we are discovering the many issues that must be addressed when beginning a GIS project. The principal work in developing the digital data layer was not computer oriented, rather it was cartographic.

First, protected open space had to be defined. The definition used for the mapping stated that any land protected in perpetuity via a deeded restriction or via ownership by the state, federal, municipal or private non-profit conservation organization was deemed "protected open space." No single data source was available that illustrated all protected open space according to this definition.

Second, a base map had to be selected onto which all open space parcels would be compiled. DEM and DFWELE decided to use the USGS 1:25,000 quadrangle sheet as the base map. This was the map that current open space information was included on and it was also the base map used for the MassGIS database. Unfortunately, not all towns use the quadrangle as a base map. As a result, it was decided that the project would be divided into three phases.

During a DFWELE funded pilot GIS study all open space in Essex County has been digitized. Fortunately, the Essex County Greenbelt Association had compiled all federal, state, local and private conservation lands onto quadrangles. Consequently, a suitable source existed for that part of the state. The pilot has been used to demonstrate the output capabilities of the GIS as well as the feasibility of creating a working GIS database. (See sample GIS maps, Volume One, pages 21 and 22.)

Phase I is underway and involves mapping all state and federally owned/managed open space onto a set of 189 quadrangles covering the state. These compiled manuscripts are being digitized at University of Massachusetts. The compilation process requires cartographers from each of the five EOEA agencies (DEQE, DEM, DFWELE, DFA, and MDC) to gather and draft onto the quadrangles all the open space that that department manages. Work is proceeding from west to east, county by county. Whenever possible, known private conservation lands and community lands are also being compiled onto the master set of quadrangles.

Phase II involves the thorough compilation of all community owned open spaces onto quadrangle sheets. This is an extremely difficult task requiring the cooperation of the communities themselves and the regional planning associations. Communities are the only reliable source of this information and consequently, each of the 351 communities in Massachusetts must be consulted and must assist in the process to develop the most reliable database. Based on available resources this will be much easier for some communities than for others. It is imperative for the accuracy of the data base that communities become involved in this process. To illustrate the importance it should be noted that of the approximately 750 open space parcels in Essex County, over 500 were owned by the towns or local land trust.

Also during Phase II a comprehensive set of private conservation lands will be compiled and digitized. Phase II has just begun, so communities and private non-profits are encouraged to update their data and compile it onto the USGS quadrangle 1:25,000 base map.

Creating the digital data layer is the first step. The state and communities must further commit to keeping these data up-to-date if they are to be of maximal utility. Mechanisms must be developed and supported immediately which will insure that new open spaces purchased are added to the digital data layer in a timely fashion.

Conclusion

SCORP 1983's recommendation to develop a statewide GIS was valuable in assisting EOEA through the justification process for the new system. Equally important now is communicating the extent of EOEA's data development effort and encouraging local communities to act now to enhance these data, thus enhancing planning capabilities. State government officials realize that communities know their areas best, and it is the intention of the developing GIS effort to take advantage of that knowledge in assembling the environmental database.

How Do We Get Involved?

Preparing Open Space Maps for Automation

Preparing municipal open space maps for automation is not very different from a traditional mapping project. The key ingredients are:

(1) standardized base map
(2) standardized open space numbering system
(3) careful research and compilation
(4) development of attribute data
(5) documentation of what was done (and not done)
(6) an ongoing plan for revisions and corrections

Standardized Base map

Summary: Use uncut 1:25,000 USGS quadrangle maps

Municipalities have used a variety of base maps for their open space mapping programs. Often the maps are derived from the local assessing maps. The best of these maps have several advantages as a local base map (large scale, reproducibility, parcel boundaries).

The great majority of local maps have several problems that greatly restrict their usefulness to a statewide system. The major problem with locally produced maps for the MassGIS system is that almost all lack a reliable coordinate reference system that would allow data digitized from the map to be merged into the statewide database in a geographically correct way. Other problems include accuracy, age, distortion caused by multiple reproductions and lack of documentation.

Maps compiled for the GIS environment need, at a minimum, an accurate coordinate reference system to allow the open space parcels to overlay the other data layers. Although the MassGIS can reproject any number of coordinate systems into its own system (Massachusetts State Plane Coordinates), experience has shown that independently produced base maps will seldom fit into a coherent whole without alignment problems.

Fortunately, Massachusetts has a good medium scale statewide base map in the USGS 1:25,000 quadrangles. This is the base map for the other GIS data layers being developed, and the base used for the state and federal lands in the open space data layer. Therefore, to enhance state GIS efforts, all new open space and other data being compiled for automation should be done on USGS 1:25,000 quad sheets. A direct film contact from a USGS produced film negative or positive is the most accurate base map from which to work. This will maintain USGS's published reliability standard of + 40 feet. This is how the GIS political boundary base map was digitized.

The source maps were USGS film positives owned by the geodetic section of the Massachusets Department of Public Works. Contact film positives (or negatives) could be made from these for about $50. per sheet.

As a practical matter, paper quad sheets are cheaper, easier to obtain, and virtually as accurate. Much of the inevitable paper stretch is compensated for because the system calculates the relative position of the coordinate reference points (the quad corners).

Each quad that includes your community should be kept whole so that the four corners are visible. These will be used by the digitizer to register the quad to the database. If the community must be spliced together for your own reasons, it should be done carefully, and with all outside quad corners left in place.

The most up-to-date quad sheets for your area should be used. Some parts of Massachusetts are now covered by a new series of 1:25,000 'doublewide' quads that are essentially two older style quads spliced together.

Standardized Open Space Numbering System

Summary: Contact the MassGIS office (617-727-6930) to be assigned numbers. Use unique numbers.

The database side of GIS works on the concept of 'attributes" (facts) linked to their geographic features with a unique ID code number. It is essential to assign an ID number to each open space parcel on the map. Properties composed of more than one distinct parcel need a unique number for each parcel, though they can share a name and other attributes.

Ranges of numbers have been assigned to the various ownership categories. For example, lands managed by the Massachusetts Department of Fisheries, Wildlife and Environmental Law Enforcement fall within the numbers 7,000 and 9,999. Each community has been allotted 100 numbers (e.g., Abington 50,000 - 50,099, Acton 50,100 - 50,199). Before a community assigns numbers, the MassGIS office should be consulted, because some numbers may have already been assigned by other mapping efforts.

Careful Research and Compilation

Summary: Collect the best source material, rescale source maps and start a master list of properties.

Any map, digital or not, is only as good as the data that goes into it. Because the digital map can be reformatted and applied for a variety of purposes, it is vital to produce the digitizing manuscript as carefully and completely as possible. This will pay dividends every time the data are used.

The rules are simple. Work from the most accurate and complete sources as possible. This may mean using a combination of existing documents, some town-wide and some of individual properties. Do not overlook getting information from knowledgeable local individuals. They may know of properties that are not on the maps. The boundaries of such properties should be accurately determined and not dependent upon word of mouth.

A master list of names and ID numbers of the properties to be put on the map should be produced. This is a useful checklist and will serve as a form upon which to put the other attributes.

Property boundaries can be traced from the source map if the scale can be brought to 1:25,000. Modern photocopy machines that can reduce and enlarge to a precise percentage are a great way to rescale maps inexpensively. With this method, the source map is moved around under the quad sheet so that the best fit is made around the parcel that is about to be traced. The unscaled source map should be kept handy as a reference because linework can be obscured in the photocopy.

Some local base maps will not fit the quad well even if the scale is nominally the same. If this is the case, or if the local map cannot be brought to the same scale, some amount of 'eyeballing' will be necessary. This is an acquired skill. Generally speaking, the parcel should fall into the road network proportionally to its place in the road network of the source map. Questionable parcel shapes must be documented as problematic on the master list.

Drafting hints:

- Draw properties with an erasable color or black pencil.
- Make lines thin but easily seen.
- Straight lines are drawn with a straightedge.
- The ID code number should be drawn in or near the parcel in an unambiguous way.
- The property name can be written in or near the parcel.

Attribute Data

Summary: Be as careful and complete as possible!

In addition to the ID code and property name, several other facts should be recorded on the master list of open space parcels:

- Owner of property
- Managing agency or program
- Date acquired
- Restrictions on development or uses
- Allowed uses
- Location of property (if not in the town that owns it)
- Comments on accuracy, completeness, etc.

This list can be produced manually or on a PC tabular database like Dbase III. A PC database should be output onto a floppy disc in standard ASCII format (Each row is represented by a column entry followed by a comma followed be the next column entry, etc.)

The master list, whether automated or manually produced should accompany the map manuscript.

Documentation

Summary: It is crucial to detail sources and methodology.

A documentation cover sheet must accompany each manuscript. This will tell future users of the data something about its age and condition. Please be honest and complete when revealing known weaknesses when the digitizing manuscript.

The following conditions should be described:

- Map name and contents
- Area covered
- Base map and scale
- Purpose of map
- Known 'holes' in the data
- Date map was produced
- Number of map sheets
- Agency and person producing map
- Source of data
- Planned updating of data
- Comments

Plan for Revisions and Corrections

Summary: Assign someone the responsibility of continuous updating.

When open space mapping commences for a community or region, someone should be designated to monitor both the inevitable errors that will surface and the changes to the data base that will occur. Because the goal of the GIS is to have the most current data 'on line', it is important to have the most recent changes available for automation. After automation, the manuscript map is returned to the producing agency for use in the revision and correction process.

In the traditional planning scenario, a study comes to an end, the data and analysis is published and the issue passes out of the limelight for a period of time. Unfortunately, the next time a similar study is initiated, the methodology for the previous data collection is lost and the data itself is completely out of date and considered unreliable. The new study starts from scratch and spends a good deal of time and money "reinventing the wheel."

This pattern of "intermittent revision" is hard to break given the cyclical nature of project funding, but a modest "continuous revision" can be much more useful and economic. For example, new open space parcels should be recorded on the original manuscript maps as they are acquired. With this scenario, up to date data are always available.

How to Gain Access to SCORP Data

The Executive Office of Environmental Affairs (EOEA Data Center has worked on the Statewide Comprehensive Open Space and Outdoor Recreation Plan (SCORP) project with the Department of Environmental Management (DEM) and the University of Massachusetts (UMASS) since June of 1987.

The Data Center began the System by bringing the 1978 data forward into a new database and by generating site inventory sheets to be sent to municipalities, private nonprofit and for profit organizations and state land managing agencies for modifications and additions. Many new data elements have been added since the 1978 study was done. While the 1988 data was being collected, an on-line system for inquiring, adding, and updating information to the new SCORP database was developed and several new batch reports, to be used in conjunction with statistical (SPSS) reports, was created. Additionally, extensive SCORP demand data has been collected and is part of the 1988 SCORP database.

Technical Specifications

The SCORP Database consists of two separate databases.

(1) SCORP Inventory Data
(2) SCORP Demand Data

The Inventory Database contains two files

(1) Site Control File
- Used to generate new site numbers for adding sites
- Contains useful information about each of the 351 incorporated cities/towns within Massachusetts (1970, '80, '85 population, County, Coastal Zone managed or not, Metropolitan District Commission area, DEM region, acreage, etc.) It is used to generate the next site number for additions to the Inventory File and also to 'seed' records being added with some of the data elements common to all sites within a town (for reduction of data entry and completeness and accuracy).
- Contains 351 records (one for each city/town) - 100 characters each.

(2) Inventory File (this is the master file of all sites)
- One data record for each site. Contains acreage, name, address, etc. and information on facilities and activities at the site.
- Contains approximately 12,300 records - 330 characters each.
- These records, too, may be accessed on-line, either by direct inquiry or through 'browsing.'

The Demand Database contains one file.

(1) Demand File
- A cross-sectional survey of the adult population in Massachusetts with oversamples of Black and Hispanic populations and people with disabilities.
- The probability sample is shown by county and planning region.

Cape Cod and the Islands
  Barnstable, Dukes and Nantucket Counties
Southeastern
  Bristol, Norfolk and Plymouth Counties
Metropolitan District Commission
  Suffolk County
Northeastern
  Essex and Middlesex Counties
Central
  Worcester County
Connecticut Valley
  Franklin, Hampden, and Hampshire Counties
Berkshires
  Berkshire County

Currently Available from the Data Center

The Data Center has been an active participant in the successful completion of the 1988 SCORP. The Data Center, the Technical Advisory Committee and all of the staff involved in this project are committed to making this information/data available to federal, state, local and nonprofit officials to aid in their efforts to plan for the protection and enhancement of natural, cultural and recreational resources.

Data are available in printed detail and summary reports, printed statistical reports, other computer media, and by direct access through communication links.

Following is a description of the production reports currently available from the SCORP Database. The number to the right of each report description is the 'Report Number' that the Data Center uses to identify each report. You may request a report by its name or, preferable, by its 'Report Number.'

The Summary Reports total data from all sites within a given town, compute additional statistics, and print two pages of Site Summary Information for each town. Additionally, two pages of Site Summary Information is generated for the Report Type; i.e., County, Region, etc.

• Town Summary by County	B325A1
• Town Summary by SCORP Region	B325A2
• Town Summary by CZM Region	B325A3
• Town Summary by MDC Region	B325A4
• Town Summary by Town	B325A5
• Town Summary by Owner Type	B325A6

The following Summary Reports are identical to the above reports except that they provide selection capability.

• Town Summary by County for Selected County(s)	B325A1SP
• Town Summary by SCORP Region for selected SCORP Region(s)	B325A2SP
• Town Summary by MCZM Region for selected MCZM Region(s)	B325A3SP
• Town Summary by MDC Region for selected MDC Region(s)	B325A4SP
• Town Summary by Town for selected Town(s)	B325A5SP
• Town Summary by Owner Type for selected Owner Type(s)	B325A6SP

The following detailed inventory listings are also available.

Detailed Site Characteristics by Site Number in Town Number Sequence B325A

- Entire State (approximately 12,300 sites)
- Selected MCZM Area(s)
- Selected County(s)
- Selected SCORP Region(s)
- Selected MDC Area(s)
- Selected Site(s)
- Selected Administrative Agency(s)
- Selected Town(s)

Detail Statistical Reports B32XXX

If you need to have a report or other output not listed here, please call the Executive Office of Environmental Affairs Data Center and explain your need. Please direct your questions or request for output(s) to the Data Centers Customer Services Manager:

Mr. Joseph Santos, Customer Service Manager
EOEA Data Center
20 Somerset Street
Boston, Massachusetts 02108
(617) 727-0248

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1988 STATEWIDE COMPREHENSIVE OUTDOOR RECREATION PLAN SUPPLY INVENTORY

NEW ____
UPDATE ____
REFERRAL ____
DELETE ____

1. NAME: ____________ 2. ADDRESS: ____________ 3. TOTAL AREA: ______ (ACRES)

4. OWNER TYPE: ______ 5. ADMIN AGENCY: ____________
6. SITE BOUNDARY: __A. ALL WITHIN __B. EXTENDS BEYOND, UNDER YOUR MGMT. __C. EXTENDS BEYOND TOWN BOUNDARY, MANAGED BY OTHER(S)
7. OTHER OWNER(S): ________ ________ ________

A. ACREAGE IMPROVED FOR REC. USE: _____._ (ACRES)
B. COULD RECREATIONAL USE BE EXPANDED AT THIS SITE? ____ YES ____ NO

8. SITE ACCESS: __A. PUBLIC, NO FEE __B. PUBLIC, FEE __C. PUBLIC, NON-RESIDENT FEE __D. PUBLIC, RESIDENT ONLY __E. PRIVATE, MEMBERS ONLY FOR FEE __F. PRIVATE, OPEN TO PUBLIC FOR FEE __G. PRIVATE, NO FEE

9. PUBLIC TRANSPORTATION AVAILABLE TO SITE: __YES __NO
10. AUTOMOBILE ACCESS: __YES __NO 11. PARKING CAPACITY: SUMMER: _____ WINTER: _____ 12. IS THERE A PARKING FEE? __YES __NO
13. ARE THERE ANY PHYSICAL FACTORS LIMITING DEVELOPMENT FOR FUTURE PARKING? __YES __NO

14. FACILITIES: (PUT THE NUMBER OF THE QUAN/SIZE UNDER # FOR EACH FACILITY. INDICATE IF HANDICAP ACCESSIBLE BY CHECKING "HP" COLUMN)

#	HP (CHECK "HP" IF HANDICAP ACCESSIBLE)	#	HP (CHECK "HP" IF HANDICAP ACCESSIBLE)	#	HP (CHECK "HP" IF HANDICAP ACCESSIBLE)
_____	__ A. BOAT RAMPS	_____	__ L. ARCHERY/TARGET SHOOTING RANGE	_____	__ Y. COMFORT STATION
_____	__ B. BOAT SLIPS AND MOORINGS	_____	__ M. BASKETBALL COURTS (OUTDOOR)	_____	__ Z. DEV. SPECTATOR SEATING (# OF)
_____	__ C. CABINS	_____	__ N. FIELDS, BASEBALL/SOFTBALL	_____	__ AA. EQUIPMENT CONCESSION (RENTAL)
_____	__ D. SIGN. HIST/CULT/ARCH FEATURE	_____	__ O. FIELDS, FOOTBALL/SOCCER	_____	__ AB. FOOD CONCESSION
_____	__ E. SIGN. NATURAL FEATURE	_____	__ P. FIELDS, GEN. OPEN REC. AREA	_____	__ AC. STAGES/BAND SHELLS
_____	__ F. NATURE CENTER	_____	__ Q. GOLF HOLES	_____	__ AD. VISITORS CENTER
_____	__ G. TENT SITES	_____	__ R. PLAYGROUNDS/TOT LOTS		
_____	__ H. TRAILER SITES	_____	__ S. TENNIS COURTS		
_____	__ I. PICNIC TABLES	SIZE			
_____	__ J. SHELTERS	_____	__ (MILES) T. USABLE BEACH FRONTAGE (FRESH WATER)		
_____	__ K. TRAILS (MILES)	_____	__ (MILES) U. USABLE BEACH FRONTAGE (SALTWATER)		
		_____	__ (SQ.FT.) V. SKATING RINKS		
		_____	__ (SQ.FT.) W. SWIMMING POOLS		
		_____	__ (PEOP/HR.) X. SKI LIFTS		

15. NUMBER OF FRESH WATER BODIES AT SITE: _____ (NUMBER)
16. ACREAGE FRESH WATER? _______ (ACRES)
17. AMOUNT OF TIDAL FRONTAGE? ___.___ (MILES)
18. IS THIS SITE WITHIN THE COASTAL ZONE BOUNDARY? ____YES ____NO

19. ARE THERE ANY TRAILS DESIGNATED FOR MOTORIZED RECREATION VEHICLES? ____NO ____YES, IF YES, HOW MANY MILES? _______ (MILES)

20. DOES SITE HAVE A TRAIL DESIGNED FOR PHYSICALLY DISABLED?: ____YES ____NO

21. ACTIVITIES: (PLEASE PLACE AN "X" NEXT TO THE LETTER FOR EACH ACTIVITY WHICH OCCURS AT THIS SITE.)

__A. BOATING (MOTOR)
__B. BOATING (NON-MOTOR)
__C. FRESH WATER FISHING
__D. SALTWATER FISHING
__E. SWIMMING (POOL)
__F. SWIMMING, FRESH-WATER
__G. SWIMMING, SALTWATER
__H. CAMPING
__I. HIKING
__J. HUNTING
__K. ORGNZD NAT/HST/CULT
__L. NATURE OBSERVATION
__M. PICNICKING
__N. SIGHTSEEING
__O. WALKING/JOGGING
__P. ARCHERY/TARGET SHOOT
__Q. BASEBALL/SOFTBALL
__R. FOOTBALL/SOCCER
__S. GOLF
__T. OTHER TEAM SPORTS
__U. ORGANIZED SPECIAL EVENTS
__V. TENNIS
__W. BICYCLING
__X. 4-WHEELING
__Y. HORSEBACK RIDING
__Z. MOTORCYCLING/ATV
__AA. ICE-SKATING
__AB. SKIING (DOWNHILL)
__AC. SKIING (X-COUNTRY)
__AD. SNOWMOBILING
__AE. OTHER: ________
__AF. OTHER: ________
__AG. OTHER: ________

22. SITE DESCRIPTION: __ A. GENERAL OUTDOOR RECREATION __ B. NATURAL ENVIRONMENT AREA __ C. HISTORIC AND CULTURAL
23. USE LEVEL AT THE SITE: __ A. OPTIMAL __ B. OVERUSED __ C. UNDERUSED

TOWN: COUNTY: CZM COMMUNITY:
DEM REGION: MDC SITE CODE: ____
AREA CLASSIFICATION:
SITE NUMBER:

**** FOR OFFICE USE ONLY ****

INSTRUCTIONS BOOKLET: GUIDELINES FOR COMPLETING THE 1988 STATEWIDE COMPREHENSIVE OUTDOOR RECREATION PLAN SITE INVENTORY

These guidelines detail the steps necessary to update the information for each site that is recorded on the attached inventory sheets. Instructions are also provided for deleting or adding sites.

For each of these sites, check the appropriate category in the top-right corner of the inventory form, using the following as a guide: **A. ADD NEW SITE(S):** complete one of the blank inventory forms for each new site; **B. UPDATE SITE:** update and add new information on each site; **C. REFERRAL OF SITE:** if you are aware of a site but do not have complete information about it, please use a blank form to note the site as a "**Referral**"; **D. DELETE SITE:** if a site no longer exists as an outdoor recreation and/or conservation site, please indicate that the site has been DELETED. A red pen has been provided for your convenience.

New items have been added to the inventory and a few have been changed in their format since the last inventory was conducted in 1978. For example, "Swimming (Other)" has now been replaced with "Swimming (Fresh Water)" and "Swimming (Saltwater)." These and other modifications will require each site to be evaluated very carefully. **PLEASE NOTE: All existing sites will need to be updated since new categories have been added to the SCORP.**

INSTRUCTIONS FOR COMPLETING INVENTORY ITEMS

Please read and use these instructions while completing each site inventory form. The following guidelines provide direction for each component of the inventory for all sites:

1. **NAME.** Enter the full name of site.

2. **ADDRESS.** Enter the street address.

3. **TOTAL AREA.** Enter the acreage of the **total** site to the nearest **tenth of an** acre.

    3A. **Acreage Improved for Recreation Use.** Enter the **combined acreage** of spaces that have been **improved for recreation use** to the nearest **tenth of an acre**. Improved acreage includes developed areas within the site such as ball fields, picnic areas, tennis courts, support facilities -- such as parking lots, etc. Do not include land primarily in a natural state, including land over which trails pass.

    3B. **Could recreational use be expanded at this site?** Check "**Yes**" if the area within the site can be expanded for recreational use; if not, check "No".

4. **OWNER TYPE.** Select from the following and enter:

1. Municipal	3. Federal	5. Private, Profit	7. Other
2. State	4. County	6. Private, Non-profit	

5. **ADMINISTRATIVE AGENCY.** Enter the name of the agency or department that is responsible for the site. For example:

Federal Examples: National Park Service; U.S. Army Corps of Engineers
State Examples: Metropolitan District Commission; Dept. of Environmental Management
Municipal Examples: Recreation & Parks Dept.; Conservation Commission
Private Examples: Audubon; Northeast Utilities; YMCA's/YWCA's; Mt. Tom Ski Area

6. **SITE BOUNDARY.** Check "**A. All Within Town**" if the entire site is completely within your local community; check "**B. Extends Beyond, Under Your Management**" if the site is managed by your community and if any portion of the site extends into one or more other communities; or check "**C. Extends Beyond Town Boundary, Managed By Others**" if the site is partially in your community but **not under your management and extends beyond your town boundary. When the site extends beyond your town, please ensure that the other communities into which the site extends are listed in the lower right-hand corner of the inventory form.**

7. **OTHER OWNER(S).** Enter the name(s) of the site owner(s) **if different from the administrative** agency indicated in question #5. For example, if your a reservoir located in your community is owned and managed by a neighboring town, you would enter the name of the neighboring municipality as the "**Other Owner**" for Question #7.

8. **SITE ACCESS.** Check one of the following but exclude parking fees:

   A. **Public, No Fee:** open to all without an admission or use charge
   B. **Public, Fee:** open to all with an admission or use charge
   C. **Public, Non-resident Fee:** free for residents, admission or use fee for non-residents
   D. **Public, Resident Only:** open to residents only
   E. **Private, Members Only for Fee:** private with member fee
   F. **Private, Open to Public for Fee:** private, open to non-members for a charge
   G. **Private, No Fee:** private, open to non-members without charge

9. **PUBLIC TRANSPORTATION AVAILABLE TO SITE.** Check "**Yes**" if public transportation is within walking distance of the site.

10. **AUTOMOBILE ACCESS.** Check "Yes" if one may drive an automobile into the site.

11. **PARKING CAPACITY.** Enter the number of parking spaces available in the **summer** and the number of parking spaces available in the **winter** under snow conditions.

12. **IS THERE A PARKING FEE?** Check "Yes" if there is a parking fee for **residents** and/or **non-residents.**

13. **ARE THERE ANY PHYSICAL FACTORS LIMITING DEVELOPMENT FOR FUTURE PARKING?** . Check "Yes" if parking lot expansion is limited by the physical characteristics of the site.

14. **FACILITIES.** Indicate the **number/length/area/size**, etc., of each facility that is present at the site in **Column 1** under the "#". Check under the Handicapped Accessible column ("HP" --**Column** 2) for **each** facility that is **accessible** to the physically disabled even if it was not specifically designed for that purpose. While some facilities need no explanation, clarification is provided below for those facilities which may be subject to interpretation.

    D. **Significant Historical/Cultural/Archaeological Feature.** These include features which have been or should be preserved for future generations.

    E. **Significant Natural Feature. Significant** natural features could include waterfalls, vistas, gorges, scenic rivers, etc., which provide **unique experiences** for the visitor.

    G. **Tent Sites.** Sites may be improved or unimproved but are designed for tents rather than trailers. If a site is used for **both tents** and **trailers, count it** only **as a trailer site.**

    H. **Trailer Sites.** If a site is developed for or will handle trailers, count as trailer site.

    K. **Trails (Miles).** Indicate **the total length** of all **marked/maintained trails** to the nearest tenth of a mile on this site.

    N. **Fields, Baseball/Softball.** Count each ballfield as a separate entry; i.e., if a site has a separate baseball field and softball field, the number "2" would would be entered.. If one ballfield is used for both, the number "1" would be entered.

    O. **Fields, Football/Soccer.** Count each football/soccer field as a separate entry; i.e., if a site has a separate football and soccer field, the number "2" would would be entered. · If one field is used for both activities, the number "1" would be entered. Other similar team sport fields such as field hockey should be counted here.

P. **Fields, General Open Space Recreation Area.** These areas or spaces are not designed for organized sports activities. Their primary use is for picnicking, sunbathing, and unstructured activities such as frisbee, kickball, kite-flying, etc. If a general purpose area is next to but not part of a ballfield, it would be entered separately.

R. **Playgrounds/Tot Lots.** These should be noted if they are a part of this larger site. Isolated, self-contained tot lots, for example, should be treated as separate sites.

S. **Tennis Courts.** Each individual court should be counted.

T. **Usable Beach Frontage (Fresh Water).** Note that this estimate is to be recorded in linear miles to the nearest tenth of a mile. The estimate should include all developed and usable freshwater frontage on ponds, lakes, rivers, etc. that may or may not have been formally developed but has access and is commonly used.

U. **Usable Beach Frontage (Saltwater).** Note that this estimate is to be recorded in linear miles to the nearest tenth of a mile. The estimate should include all developed and usable saltwater frontage in tidal areas that may or may not have been formally developed but has access and is commonly used.

V. **Skating Rinks.** This entry estimate is in square feet. The minimum size of a skating rink is 85' by 185' or 15,725 square feet and the ideal size is 85' by 200' or 17,000 square feet.

W. **Swimming Pools.** This entry is for outdoor swimming pools in square feet. The minimum size of a competitive 25 yard, six-lane pool is 75 ft. by 45 ft. or 3,375 square feet.

X. **Ski Lifts.** Enter the maximum users per hour accommodated by all lifts.

Z. **Developed Spectator Seating.** Enter the actual number of seats developed or built in amphitheaters, racetracks, stadiums, etc., including bleachers.

15. NUMBER OF FRESH WATER BODIES AT SITE. Includes all fresh water bodies (including ponds, lakes, rivers, and streams) but not ocean frontage or marshes. Enter the number of water bodies.

16. ACREAGE OF FRESH WATER. Enter the full acreage of all water bodies even if portions of the water bodies are shared by other communities.

17. AMOUNT OF TIDAL FRONTAGE. Enter the linear distance of all ocean tidal frontage to the nearest tenth of a mile. Do not include the shorelines of saltwater marshes. This includes usable and non-usable tidal frontage.

18. IS THIS SITE WITHIN THE COASTAL ZONE BOUNDARY? Check "Yes" if any portion of the site is located within the coastal zone; if not, check "No". The Coastal Zone Management Area includes all of Cape Cod, Martha's Vineyard and Nantucket; elsewhere, the landward boundary of the coastal zone is usually an area defined as between the coast and the first major inland highway or other visible right-of-way (e.g., a rail line). If you should have any questions on the coastal zone boundary area, please contact us or the Coastal Zone Management Office; 100 Cambridge Street; 20th Floor; Boston, MA 02202; Telephone: (617) 727-9530.

19. ARE ANY TRAILS DESIGNATED FOR MOTORIZED RECREATION VEHICLES? Enter "Yes" if any motorized recreation vehicles are permitted on any of the trails on the site during any season of the year. This includes such vehicle uses as 4-wheel drives, ATVs, motorcycles, snowmobiles, etc. If "Yes" also enter the total length of trail(s) in linear miles to the nearest tenth for all motorized use.

20. DOES SITE HAVE A TRAIL DESIGNED FOR THE PHYSICALLY DISABLED? A trail is considered a special designed trail for the physically disabled if it has specifically been built/developed to accommodate those individuals with physical disabilities.

21. ACTIVITIES. Check all activities that occur on the site. While most of the activities need no explanation, clarification is provided below for those activities which may be subject to interpretation. Guidelines are as follows:

    K. **Organized Natural/Historic/Cultural Activities.** Only organized or structured (e.g., self-guided walks) activities should be included. The program may be self-sponsored or provided by another organization.

    L. **Nature Observation.** Nature observation that is not organized that includes observing vegetation, wildlife and other natural features within the site.

    U. **Organized Special Events.** These occur occasionally, often associated with a theme such as the Fourth of July, Special Olympics, Fall craft festivals, Summer concerts in the park, etc. These events are promoted as being "special".

22. **SITE DESCRIPTION.** A site may have more than one characteristic. Select one of the following that best describes the nature of the site:

    (A). **General Outdoor Recreation.** The site provides general recreation activities such as swimming, field games, skiing, tennis, picnicking, festivals, etc. It may be located in urban or rural areas; in the latter case, while the site may be in a natural area, the emphasis is on activities rather than the environment itself.

    (B). **Natural Environment Area.** The site is in a natural setting, and offers nature-related experiences such as hiking, nature study, tranquility, picnicking, fishing, scenic views, water, etc. It may have amenities such as comfort stations, a visitors' center, or campsites, but is primarily viewed as a site designed to provide experiences close to nature.

    (C). **Historic and Cultural.** The site is known primarily for cultural or historic characteristics. While other features may be available, they are not the main factors that attract visitors. Examples could include Bunker Hill, Tanglewood, and Old Sturbridge Village.

23. **USE LEVEL AT THE SITE.** The use-level is a matter of judgment based upon your perception and knowledge of the site. Overuse, for example, can be related to crowding, limited parking opportunities, adverse environmental impact or inadequate staffing.

ASSISTANCE IN COMPLETING THE INVENTORY

Should you need assistance, a staff member is available to assist you. That individual's name is listed inside the front cover of the inventory packet. However, please feel free to contact any of the following staff members who are available Monday through Friday, 9AM to 4:30PM .

PROJECT MANAGERS: Larry R. Klar and Rodney B. Warnick

RESEARCH ASSISTANTS: Stuart Beckley (Supervisor), Mike Charette, Helen Edmonds, Ned Keefe, Carl Mailler, Gale Nigrelli and Christopher Ryan

ADDRESS:
SCORP Project
Dept. of Landscape Architecture & Regional Planning
109 Hills North; University of Massachusetts
Amherst, MA 01003-0069

TELEPHONE: (413) 545-0615, 545-0619 or 545-2255

Table S1
Sites and Acreage by County

County	Number of Sites	Percent of Sites	Total Acreage	Percent Acreage	Average Acres/Site
Barnstable	1,198	11%	130,154.1	11.8%	108.6
Berkshire	488	4%	176,252.5	16.0%	361.2
Bristol	641	6%	42,094.6	3.8%	65.7
Dukes	116	1%	9,397.4	0.9%	81.0
Essex	1,165	11%	66,276.9	6.0%	56.9
Franklin	300	3%	82,414.8	7.5%	274.7
Hampden	697	6%	67,629.5	6.1%	97.0
Hampshire	287	3%	118,784.6	10.8%	413.9
Middlesex	1,938	18%	96,769.8	8.8%	49.9
Nantucket	83	1%	9,126.9	0.8%	110.0
Norfolk	876	8%	47,965.1	4.3%	54.8
Plymouth	1,136	10%	70,012.9	6.3%	61.6
Suffolk	762	7%	9,168.0	0.8%	12.0
Worcester	1,276	12%	177,976.9	16.1%	139.5
Statewide Total	10,963	100%	1,104,024.0	100.0%	100.7

Table S2
Facilities by County

	Barnstable	Berkshire	Bristol	Dukes	Essex	Franklin	Hampden	Hampshire	Middlesex	Nantucket	Norfolk	Plymouth	Suffolk	Worcester
Number of Sites:	1,198	448	641	116	1,165	300	697	287	1,938	83	876	1,136	762	1,276
Total Acreage:	130,154	176,253	42,095	9,397	66,277	82,415	67,630	118,785	96,770	9,127	47,965	70,013	9,168	177,977
Acreage Improved Rec:	3,579	2,055	1,683	226	4,166	71	1,464	11,417	2,517	4	3,053	2,534	249	5,103
Poss Rec Expansion Sites:	215	90	84	17	144	59	127	70	386	3	161	161	16	274
Nat. Resource Facilities														
Boat Ramps	161	47	40	8	75	10	13	19	46	1	14	67	7	55
Boat Slips and Moorings	6,321	141	1,422	1,161	5,180	3	0	474	76	327	1,081	5,310	1,419	24
Cabins	100	182	6	0	15	22	32	29	26	0	41	105	0	80
Sign. Hist/Cult/Arch	86	40	27	5	40	32	40	12	57	0	29	43	91	32
Sign. Natural Feature	127	33	10	9	44	13	23	24	63	0	15	29	125	38
Nature Center	12	4	3	2	12	0	5	5	7	0	14	12	2	19
Tent Sites	1,353	887	520	47	807	318	328	321	616	2	171	932	8	824
Trailer Sites	4,058	1,922	503	0	1,202	620	970	501	269	0	399	2,589	0	5,018
Picnic Tables	5,306	2,730	1,279	226	1,602	1,305	2,925	2,318	2,954	0	1,488	3,108	467	8,674
Shelters	24	43	20	0	23	13	106	32	38	0	33	37	28	58
Trails (miles)	217	768	78	46	387	179	200	209	499	3	215	227	49	577
Sports/Rec. Facilities														
Archery/Target Shooting	25	13	8	0	8	3	9	4	19	0	12	17	0	41
Basketball Courts	74	62	102	0	154	31	141	58	316	0	157	105	196	186
Baseball/Softball Fields	102	98	160	7	266	52	227	131	520	0	263	144	183	310
Football/Soccer Fields	49	47	58	0	102	23	136	63	295	0	128	76	40	170
Open Recreation Fields	90	93	67	4	161	58	265	103	313	0	148	86	178	201
Golf Holes	469	258	459	27	513	120	462	127	703	27	466	489	27	563
Playgrounds/Totlots	84	99	92	3	161	42	130	63	359	0	158	98	263	186
Tennis Courts	337	319	307	22	489	122	331	192	1,002	15	609	445	209	476
Freshwater Beach (miles)	12	12	2	0	5	2	7	4	13	0	5	17	1	16
Saltwater Beach (miles)	65	0	3	5	19	0	0	0	0	1	2	38	11	0
Skating Rinks (sq. ft.)	58,550	295,002	301,176	34,725	685,618	64,725	592,364	66,591	738,174	0	619,999	71,150	267,501	467,966
Swimming Pools (sq. ft.)	51,055	284,075	125,650	0	214,131	81,925	255,496	81,698	496,417	0	215,981	96,130	115,725	350,125
Ski Lift (vert. lift per hr)	0	37,931	0	0	11,250	7,000	16,670	600	21,840	0	6,300	0	0	12,075
Support Facilities														
Comfort Stations	245	88	92	10	110	83	164	96	127	2	76	171	42	178
Dev. Spectator Seating	2,730	9,522	13,293	0	21,106	3,392	24,756	27,694	41,435	0	8,254	3,317	49,482	72,262
Equipment Concessions	39	10	26	0	27	7	9	13	18	0	9	38	6	14
Food Concessions	80	37	43	7	58	18	144	26	59	2	39	44	22	75
Stages/Band Shells	24	8	7	2	10	3	10	12	12	0	7	12	10	23
Visitor Centers	18	24	9	0	7	5	5	8	10	0	16	9	4	13
Freshwater Bodies (#)	367	200	171	20	281	79	144	132	453	3	175	242	54	321
Freshwater Body Acreage	10,819	12,556	11,756	4,311	4,671	654	3,367	26,445	11,583	13	1,758	6,464	1,786	20,024
RV Trails (#)	13	9	3	0	9	15	2	4	8	1	7	5	0	15
Designated HC Trail	25	2	4	1	9	2	4	5	16	0	6	9	2	17
Tidal Frontage	170	0	27	31	82	0	0	0	1	6	7	78	22	2

Table S3
Activity Opportunities by County

Activity	Barnstable	Berkshire	Bristol	Dukes	Essex	Franklin	Hampden	Hampshire	Middlesex	Nantucket	Norfolk	Plymouth	Suffolk	Worcester
Number of Sites:	1,198	488	641	116	1,165	300	697	287	1,938	83	876	1,136	762	1,276
Natural Resource Act.														
Camping	42	81	34	4	43	35	28	46	93	2	42	48	2	96
Hiking	414	312	271	47	398	199	227	167	813	62	506	502	27	688
Hunting	164	81	39	6	35	91	40	46	129	32	52	128	0	180
Org. Nat/Hist/Cult	46	24	12	2	36	7	20	10	43	1	16	35	13	34
Nature Observation	634	276	269	63	518	116	124	124	919	70	457	551	169	484
Picnicking	254	173	124	30	254	113	297	118	463	20	206	185	155	431
Sightseeing	156	52	29	14	48	16	39	25	116	1	48	56	137	75
Walking/Jogging	354	120	75	13	160	77	242	87	438	3	174	125	98	283
Sports and Field Games														
Target Ranges	32	51	27	1	16	43	26	21	62	0	48	41	0	79
Baseball/Softball	82	70	96	4	184	40	122	68	331	0	147	100	85	223
Football/Soccer	53	40	51	2	95	17	88	47	234	0	84	61	33	158
Golf	53	40	51	2	95	17	88	47	234	0	84	61	33	158
Other Team Sports	45	25	35	3	36	19	34	13	51	3	30	35	2	58
Org. Special Events	95	50	45	3	71	39	65	33	153	0	68	54	35	131
Tennis	81	84	90	7	149	30	87	30	288	4	149	124	73	188
Basketball	49	56	66	1	121	24	111	35	224	0	130	80	136	144
General Playground	85	119	115	6	228	67	320	71	432	1	190	120	335	275
Transportation Activities														
Bicycling	92	103	58	6	82	94	170	56	148	0	87	93	24	304
4-wheeling	11	1	0	1	0	0	1	3	3	1	0	3	0	8
Horseback Riding	55	80	54	7	99	74	45	58	348	1	86	123	4	156
ATV/Motorcycling	10	25	4	1	13	39	20	8	15	1	29	21	1	53
Ice-Skating	34	67	43	2	113	22	85	43	203	0	99	80	20	142
Skiing (downhill)	1	21	3	0	10	9	8	2	22	0	8	6	0	15
Skiing (X-Country)	33	192	59	2	173	100	86	66	524	2	81	74	1	237
Snowmobiling	2	71	18	1	35	86	48	38	89	0	44	31	1	174
Water-Based Activities														
Boating (motor)	339	44	85	33	169	25	26	28	64	8	52	202	36	82
Boating (non-motor)	411	87	110	36	248	35	50	57	183	10	120	270	37	206
Fishing (fresh)	111	145	60	2	131	90	117	115	346	0	136	141	6	344
Fishing (salt)	253	0	36	31	84	0	0	0	0	8	14	76	23	0
Swimming (pools)	17	37	40	0	42	23	78	24	104	1	41	29	24	65
Swimming (fresh)	68	96	31	0	36	24	53	38	103	0	38	70	1	168
Swimming (salt)	190	0	12	19	32	0	0	0	0	0	18	46	10	0

Table S4
Land Area and Population by County

County	1980 Population (US Census)	1986 Population (Estimate)	County Land Area (Sq Miles)	County Land Area (Acres)	SCORP Land Area (Acres)	% SCORP Lands to County Land	SCORP Acres Per 1,000 Pop. (1986)
Barnstable	147,925	170,560	399	255,462	130,154	51	763.1
Berkshire	145,110	141,300	933	597,043	176,253	30	1,247.4
Bristol	447,641	484,900	557	356,237	42,095	12	86.8
Dukes	8,942	10,950	105	67,456	9,397	14	858.2
Essex	633,688	649,390	495	316,710	66,277	21	102.1
Franklin	64,317	65,970	702	448,960	82,415	18	1,249.3
Hampden	443,018	444,870	621	397,728	67,630	17	152.0
Hampshire	138,813	141,470	530	339,053	118,785	35	839.6
Middlesex	1,367,034	1,367,050	834	533,702	96,770	18	70.8
Nantucket	5,087	6,000	47	30,317	9,127	30	1,521.2
Norfolk	606,587	602,560	400	256,090	47,965	19	79.6
Plymouth	405,437	424,400	656	419,558	70,013	17	165.0
Suffolk	650,142	661,390	57	36,307	9,168	25	13.9
Worcester	646,352	661,110	1,503	962,131	177,977	18	269.2
Statewide Total	5,710,093	5,831,920	7,839	5,016,755	1,104,024	22	189.3

Table S5
Site Classifications by County

	General Outdoor Recreation Area	Natural Environment	Historical/ Cultural	Missing	Total
	N	N	N	N	N
County	%	%	%	%	%
Barnstable	558	496	48	96	1,198
	46.6%	41.4%	4.0%	8.0%	100.0%
Berkshire	284	163	31	10	488
	58.2%	33.4%	6.4%	2.0%	100.0%
Bristol	371	234	15	21	641
	57.9%	36.5%	2.3%	3.3%	100.0%
Dukes	57	41	2	16	116
	49.1%	35.3%	1.7%	13.8%	100.0%
Essex	612	433	45	75	1,165
	52.5%	37.2%	3.9%	6.4%	100.0%
Franklin	184	99	15	2	300
	61.3%	33.0%	5.0%	0.7%	100.0%
Hampden	522	124	31	20	697
	74.9%	17.8%	4.4%	2.9%	100.0%
Hampshire	163	118	6	0	287
	56.8%	41.1%	2.1%	0.0%	100.0%
Middlesex	992	839	70	37	1,938
	51.2%	43.3%	3.6%	1.9%	100.0%
Nantucket	22	60	0	1	83
	26.5%	72.3%	0.0%	1.2%	100.0%
Norfolk	446	377	36	17	876
	50.9%	43.0%	4.1%	1.9%	100.0%
Plymouth	554	489	49	44	1,136
	48.8%	43.0%	4.3%	3.9%	100.0%
Suffolk	339	225	43	95	702
	48.3%	32.1%	6.1%	13.5%	100.0%
Worcester	817	397	49	13	1,276
	64.0%	31.1%	3.8%	1.0%	100.0%
Statewide Total	5,921	4,095	440	447	10,903
	54.3%	37.6%	4.0%	4.1%	100.0%

Unclassified sites = 34

Table S6
Site Access by County

Number of Sites:	Barnstable 1,198	Berkshire 488	Bristol 641	Dukes 116	Essex 1,165	Franklin 300	Hampden 697	Hampshire 287	Middlesex 1,938	Nantucket 83	Norfolk 876	Plymouth 1,136	Suffolk 762	Worcester 1,276
Access Factor														
Public Trans. to Site														
Yes	99	113	133	8	226	56	252	79	535	0	218	174	192	278
No	900	341	433	73	662	224	270	193	1,126	75	630	845	23	962
No Answer	199	34	75	35	277	20	175	15	277	8	28	117	547	36
Auto Access to Site														
Yes	977	395	512	90	811	258	490	255	1,371	74	758	930	400	1,125
No	172	82	98	24	251	27	55	24	314	8	107	171	77	114
No Answer	49	11	31	2	103	15	152	8	253	1	11	35	285	37
Parking Fee at Site														
Yes	98	16	15	6	38	12	19	254	20	2	10	23	8	35
No	913	422	548	87	898	263	469	9	1,628	71	829	999	267	1,190
No Answer	187	50	78	23	229	25	209	24	290	10	37	114	487	51

Table S7
Fee Access by County

Number of Sites:	Barnstable 1,198	Berkshire 488	Bristol 641	Dukes 116	Essex 1,165	Franklin 300	Hampden 697	Hampshire 287	Middlesex 1,938	Nantucket 83	Norfolk 876	Plymouth 1,136	Suffolk 762	Worcester 1,276
Type of Access														
Public, no fee	716	283	390	50	694	179	532	183	1,480	8	651	798	586	884
Public, fee	81	9	32	7	62	8	26	8	57	4	39	33	22	40
Public, non-resident fee	7	0	0	0	0	0	4	1	2	0	1	3	0	1
Public, resident only	44	7	0	3	13	1	4	3	24	0	4	13	4	7
Private, members only for fee	52	44	44	3	51	24	56	27	114	1	62	59	1	137
Private, open to public for fee	115	77	88	24	92	41	43	40	79	11	44	125	13	94
Private, no fee	70	51	66	12	176	37	11	21	121	59	37	56	43	76
Other access types	0	0	0	0	0	0	0	0	0	0	0	1	0	0
No answer	113	17	21	17	77	10	21	4	60	0	38	48	93	37

Table S8
Site Expansion Potential by County

Number of Sites:	Barnstable 1,198	Berkshire 488	Bristol 641	Dukes 116	Essex 1,165	Franklin 300	Hampden 697	Hampshire 287	Middlesex 1,938	Nantucket 83	Norfolk 876	Plymouth 1,136	Suffolk 762	Worcester 1,276
Assessment Factor														
Can recreational use be expanded at site?														
Yes	215	90	84	17	144	54	127	70	386	3	161	161	16	274
No	419	107	128	26	253	59	176	66	481	2	175	198	85	207
No Answer	564	291	429	73	768	187	394	151	1,071	78	540	777	661	795
Are there factors limiting parking expansion?														
Yes	474	106	137	39	354	67	190	78	563	6	261	284	127	300
No	185	91	60	12	108	58	79	52	257	2	109	128	4	213
No Answer	539	291	444	65	703	175	428	157	1,118	75	506	724	631	763

Table S9
Use Levels by County

County	Optimal N %	Over N %	Under N %	Missing N %	Total N %
Barnstable	388	105	121	584	1,198
	32.4%	8.8%	10.1%	48.7%	100.0%
Berkshire	132	12	80	264	488
	27.0%	2.5%	16.4%	54.1%	100.0%
Bristol	154	12	85	390	641
	24.0%	1.9%	13.3%	60.8%	100.0%
Dukes	22	6	9	79	116
	19.0%	5.2%	7.8%	68.1%	100.0%
Essex	388	37	106	634	1,165
	33.3%	3.2%	9.1%	54.4%	100.0%
Franklin	60	13	62	165	300
	20.0%	4.3%	20.7%	55.0%	100.0%
Hampden	125	27	100	445	697
	17.9%	3.9%	14.3%	63.8%	100.0%
Hampshire	96	20	64	107	287
	33.4%	7.0%	22.3%	37.3%	100.0%
Middlesex	484	91	341	1,022	1,938
	25.0%	4.7%	17.6%	52.7%	100.0%
Nantucket	3	0	4	76	83
	3.6%	0.0%	4.8%	91.6%	100.0%
Norfolk	150	51	175	500	876
	17.1%	5.8%	20.0%	57.1%	100.0%
Plymouth	208	37	185	706	1,136
	18.3%	3.3%	16.3%	62.1%	100.0%
Suffolk	46	16	29	671	762
	6.0%	2.1%	3.8%	88.1%	100.0%
Worcester	280	59	232	705	1,276
	21.9%	4.6%	18.2%	55.3%	100.0%
Statewide Total	2,539	487	1,595	6,356	10,976
	23.1%	4.4%	14.5%	57.9%	100.0%

Table S10 Supplemental Population Data by City and Town

Town No.	City	County	1980 Census Population	1986 Census Estimate	1990 MISER Projection	1995 MISER Projection
1	Abington	Plymouth	13,517	13,630	14,158	15,243
2	Acton	Middlesex	17,544	17,350	17,280	17,088
3	Acushnet	Bristol	8,704	9,070	9,222	9,447
4	Adams	Berkshire	10,381	10,080	9,947	9,666
5	Agawam	Hampden	26,271	27,130	27,351	27,182
6	Alford	Berkshire	394	400	400	388
7	Amesbury	Essex	13,971	14,780	14,717	14,565
8	Amherst	Hampshire	33,229	32,260	33,683	36,098
9	Andover	Essex	26,370	27,230	27,118	26,852
10	Arlington	Middlesex	48,219	44,350	42,744	40,639
11	Ashburnham	Worcester	4,075	4,930	5,433	6,161
12	Ashby	Middlesex	2,311	2,730	3,000	3,381
13	Ashfield	Franklin	1,458	1,530	1,570	1,628
14	Ashland	Middlesex	9,165	10,870	12,280	14,473
15	Athol	Worcester	10,634	10,840	10,862	10,896
16	Attleboro	Bristol	34,196	34,910	35,483	36,345
17	Auburn	Worcester	14,845	14,580	14,238	13,854
18	Avon	Norfolk	5,026	4,790	4,710	4,588
19	Ayer	Middlesex	6,993	6,780	6,747	6,671
20	Barnstable	Barnstable	30,898	36,540	39,931	45,687
21	Barre	Worcester	4,102	4,380	4,491	4,617
22	Becket	Berkshire	1,339	1,610	1,770	1,927
23	Bedford	Middlesex	13,067	12,490	12,211	11,808
24	Belchertown	Hampshire	8,339	9,670	10,839	12,395
25	Bellingham	Norfolk	14,300	14,230	14,224	14,157
26	Belmont	Middlesex	26,100	25,020	24,320	23,340
27	Berkley	Bristol	2,731	3,630	4,334	5,342
28	Berlin	Worcester	2,215	2,220	2,235	2,239
29	Bernardston	Franklin	1,750	1,790	1,830	1,887
30	Beverly	Essex	37,655	36,980	36,126	34,893
31	Billerica	Middlesex	36,727	38,230	38,181	37,841
32	Blackstone	Worcester	6,570	7,120	7,461	7,917
33	Blandford	Hampden	1,038	1,160	1,179	1,177
34	Bolton	Worcester	2,530	2,940	3,012	3,070
35	Boston	Suffolk	562,994	573,600	574,220	575,545
36	Bourne	Barnstable	13,874	15,730	17,133	19,564
37	Boxborough	Middlesex	3,126	3,060	3,053	3,019
38	Boxford	Essex	5,374	6,220	6,549	6,823
39	Boylston	Worcester	3,470	3,530	3,548	3,569
40	Braintree	Norfolk	36,337	34,690	34,690	34,523
41	Brewster	Barnstable	5,226	7,050	7,754	8,892
42	Bridgewater	Plymouth	17,202	18,420	20,227	22,896
43	Brimfield	Hampden	2,318	2,680	2,882	3,100
44	Brockton	Plymouth	95,172	93,870	96,961	103,849
45	Brookfield	Worcester	2,397	2,730	2,934	3,201
46	Brookline	Norfolk	55,062	52,360	52,321	52,079
47	Buckland	Franklin	1,864	1,890	1,930	1,991
48	Burlington	Middlesex	23,486	22,750	22,651	22,413
49	Cambridge	Middlesex	95,322	91,260	88,205	84,298
50	Canton	Norfolk	18,182	18,340	18,419	18,405

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Town No.	City	County	1980 Census Population	1986 Census Estimate	1990 MISER Projection	1995 MISER Projection
51	Carlisle	Middlesex	3,306	4,060	4,557	5,278
52	Carver	Plymouth	6,988	10,470	12,039	14,056
53	Charlemont	Franklin	1,149	1,210	1,247	1,292
54	Charlton	Worcester	6,719	8,110	8,825	9,643
55	Chatham	Barnstable	6,071	6,430	6,557	6,986
56	Chelmsford	Middlesex	31,174	31,810	31,706	31,400
57	Chelsea	Suffolk	25,431	25,640	25,725	25,825
58	Cheshire	Berkshire	3,124	3,340	3,344	3,293
59	Chester	Hampden	1,123	1,220	1,238	1,233
60	Chesterfield	Hampshire	1,000	1,210	1,354	1,557
61	Chicopee	Hampden	55,112	57,100	56,736	55,788
62	Chilmark	Dukes	489	620	693	821
63	Clarksburg	Berkshire	1,871	1,790	1,762	1,713
64	Clinton	Worcester	12,771	12,440	12,435	12,443
65	Cohasset	Norfolk	7,174	7,290	7,289	7,252
66	Colrain	Franklin	1,552	1,670	1,719	1,783
67	Concord	Middlesex	16,293	16,470	16,401	16,228
68	Conway	Franklin	1,213	1,400	1,461	1,531
69	Cummington	Hampshire	657	800	896	1,055
70	Dalton	Berkshire	6,797	6,510	6,351	6,106
71	Danvers	Essex	24,100	24,150	23,876	23,515
72	Dartmouth	Bristol	23,966	25,610	26,135	26,833
73	Dedham	Norfolk	25,298	23,810	22,952	21,795
74	Deerfield	Franklin	4,517	4,700	4,827	5,002
75	Dennis	Barnstable	12,360	13,700	15,014	17,207
76	Dighton	Bristol	5,352	5,420	5,508	5,649
77	Douglas	Worcester	3,730	4,590	5,057	5,575
78	Dover	Norfolk	4,703	4,830	4,833	4,808
79	Dracut	Middlesex	21,249	24,040	25,406	26,972
80	Dudley	Worcester	8,717	8,840	9,005	9,153
81	Dunstabe	Middlesex	1,671	2,080	2,269	2,505
82	Duxbury	Plymouth	11,807	13,820	14,741	16,212
83	East Bridgewater	Plymouth	9,945	10,080	10,604	11,569
84	East Brookfield	Worcester	1,955	1,860	1,767	1,640
85	East Longmeadow	Hampden	12,905	12,910	12,833	12,627
86	Eastham	Barnstable	3,472	4,280	4,669	5,344
87	Easthampton	Hampshire	15,580	16,330	17,042	18,265
88	Easton	Bristol	16,623	19,090	20,755	22,902
89	Edgartown	Dukes	2,204	2,990	3,270	3,763
90	Egremont	Berkshire	1,311	1,310	1,311	1,280
91	Erving	Franklin	1,326	1,420	1,468	1,533
92	Essex	Essex	2,998	2,960	2,949	2,917
93	Everett	Middlesex	37,195	36,330	35,932	35,362
94	Fairhaven	Bristol	15,759	15,690	15,837	16,133
95	Fall River	Bristol	92,574	90,420	89,266	88,987
96	Falmouth	Barnstable	23,640	25,440	26,572	28,685
97	Fitchburg	Worcester	39,580	39,040	39,219	39,401
98	Florida	Berkshire	730	690	685	666
99	Foxborough	Norfolk	14,148	14,550	14,540	14,471
100	Framingham	Middlesex	65,113	63,890	63,611	62,925
101	Franklin	Norfolk	18,217	19,620	20,682	22,188

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Town No.	City	County	1980 Census Population	1986 Census Estimate	1990 MISER Projection	1995 MISER Projection
102	Freetown	Bristol	7,058	8,020	8,359	8,712
103	Gardner	Worcester	17,900	18,420	18,459	18,523
104	Gay Head	Dukes	220	220	253	308
105	Georgetown	Essex	5,687	6,010	5,983	5,921
106	Gill	Franklin	1,259	1,300	1,327	1,374
107	Gloucester	Essex	27,768	28,230	28,144	27,901
108	Goshen	Hampshire	651	760	792	845
109	Gosnold	Dukes	63	50	35	26
110	Grafton	Worcester	11,238	11,840	12,185	12,537
111	Granby	Hampshire	5,380	5,550	5,759	6,145
112	Granville	Hampden	1,204	1,360	1,379	1,381
113	Great Barrington	Berkshire	7,405	7,280	7,435	7,526
114	Greenfield	Franklin	18,436	17,900	17,581	17,221
115	Groton	Middlesex	6,154	7,030	7,637	8,371
116	Groveland	Essex	5,040	5,080	5,023	4,940
117	Hadley	Hampshire	4,125	4,120	4,305	4,611
118	Halifax	Plymouth	5,513	6,230	6,626	7,253
119	Hamilton	Essex	6,960	7,140	7,114	7,051
120	Hampden	Hampden	4,745	4,650	4,622	4,546
121	Hancock	Berkshire	643	600	586	558
122	Hanover	Plymouth	11,358	11,560	12,156	13,227
123	Hanson	Plymouth	8,617	9,010	9,466	10,299
124	Hardwick	Worcester	2,272	2,300	2,312	2,317
125	Harvard	Worcester	12,170	13,140	13,938	14,862
126	Harwich	Barnstable	8,971	9,860	10,527	11,725
127	Hatfield	Hampshire	3,045	3,140	3,262	3,483
128	Haverhill	Essex	46,865	48,620	48,999	49,064
129	Hawley	Franklin	280	370	433	538
130	Heath	Franklin	482	580	641	721
131	Hingham	Plymouth	20,339	19,670	20,509	22,162
132	Hinsdale	Berkshire	1,707	1,780	1,775	1,737
133	Holbrook	Norfolk	11,140	10,880	10,773	10,620
134	Holden	Worcester	13,336	13,750	13,812	13,881
135	Holland	Hampden	1,589	1,780	1,820	1,824
136	Holliston	Middlesex	12,622	12,980	12,925	12,781
137	Holyoke	Hampden	44,678	42,000	41,486	40,598
138	Hopedale	Worcester	3,905	3,980	3,993	4,009
139	Hopkinton	Middlesex	7,114	8,460	9,489	10,897
140	Hubbardston	Worcester	1,797	2,010	2,039	2,052
141	Hudson	Middlesex	16,408	17,550	17,905	18,263
142	Hull	Plymouth	9,714	9,630	9,875	10,520
143	Huntington	Hampshire	1,804	1,930	2,019	2,162
144	Ipswich	Essex	11,158	11,750	11,700	11,579
145	Kingston	Plymouth	7,362	8,200	9,135	10,746
146	Lakeville	Plymouth	5,931	7,350	8,808	11,355
147	Lancaster	Worcester	6,334	6,160	6,188	6,217
148	Lanesborough	Berkshire	3,131	3,170	3,142	3,055
149	Lawrence	Essex	63,175	63,420	62,565	61,545
150	Lee	Berkshire	6,247	6,030	5,971	5,805
151	Leicester	Worcester	9,446	9,680	9,764	9,844
152	Lenox	Berkshire	6,523	6,550	6,607	6,526

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Town No.	City	County	1980 Census Population	1986 Census Estimate	1990 MISER Projection	1995 MISER Projection
153	Leominster	Worcester	34,508	35,060	35,227	35,389
154	Leverett	Franklin	1,471	1,560	1,609	1,665
155	Lexington	Middlesex	29,479	28,610	27,709	26,629
156	Leyden	Franklin	498	620	648	682
157	Lincoln	Middlesex	7,098	7,710	7,954	8,220
158	Littleton	Middlesex	6,970	7,170	7,248	7,266
159	Longmeadow	Hampden	16,301	16,380	16,292	16,015
160	Lowell	Middlesex	92,418	92,880	94,024	94,962
161	Ludlow	Hampden	18,150	18,740	18,769	18,555
162	Lunenburg	Worcester	8,405	8,850	8,913	8,969
163	Lynn	Essex	78,471	78,560	78,163	77,371
164	Lynnfield	Essex	11,267	11,350	11,298	11,181
165	Malden	Middlesex	53,386	53,490	53,243	52,668
166	Manchester	Essex	5,424	5,260	4,974	4,609
167	Mansfield	Bristol	13,453	14,920	15,228	15,623
168	Marblehead	Essex	20,126	19,580	18,549	17,238
169	Marion	Plymouth	3,932	4,170	4,387	4,780
170	Marlborough	Middlesex	30,617	31,180	31,044	30,716
171	Marshfield	Plymouth	20,916	22,180	23,463	25,658
172	Mashpee	Barnstable	3,700	5,940	6,913	8,287
173	Mattapoisett	Plymouth	5,597	5,850	6,103	6,588
174	Maynard	Middlesex	9,590	9,900	9,974	10,017
175	Medfield	Norfolk	10,220	10,610	10,829	11,016
176	Medford	Middlesex	58,076	56,830	56,296	55,481
177	Medway	Norfolk	8,447	9,360	10,048	10,924
178	Melrose	Middlesex	30,055	28,790	27,973	26,927
179	Mendon	Worcester	3,108	3,490	3,632	3,759
180	Merrimac	Essex	4,451	4,870	4,971	5,042
181	Methuen	Essex	36,701	39,470	40,716	42,321
182	Middlebourough	Plymouth	16,404	17,410	18,895	21,221
183	Middlefield	Hampshire	385	430	476	541
184	Middleton	Essex	4,135	4,710	5,024	5,458
185	Milford	Worcester	23,390	24,230	24,350	24,471
186	Millbury	Worcester	11,808	11,840	11,771	11,693
187	Millis	Norfolk	6,908	7,250	7,314	7,321
188	Millville	Worcester	1,693	2,010	2,263	2,684
189	Milton	Norfolk	25,860	25,500	25,354	25,127
190	Monroe Bridge	Franklin	179	140	125	104
191	Monson	Hampden	7,315	7,670	7,669	7,577
192	Montague	Franklin	8,011	7,980	8,099	8,328
193	Monterey	Berkshire	818	970	1,022	1,050
194	Montgomery	Hampden	637	690	692	679
195	Mount Washington	Berkshire	93	100	101	100
196	Nahant	Essex	3,947	3,940	3,825	3,685
197	Nantucket	Nantucket	5,087	6,000	6,375	7,067
198	Natick	Middlesex	29,461	30,270	30,147	29,835
199	Needham	Norfolk	27,901	27,240	26,974	26,629
200	New Ashford	Berkshire	159	140	139	134
201	New Bedford	Bristol	98,478	96,450	96,566	97,461
202	New Braintree	Worcester	671	700	705	701
203	New Marlboro	Berkshire	1,160	1,330	1,409	1,485

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Town No.	City	County	1980 Census Population	1986 Census Estimate	1990 MISER Projection	1995 MISER Projection
204	New Salem	Franklin	688	880	925	969
205	Newbury	Essex	4,529	5,360	5,706	6,122
206	Newburyport	Essex	15,900	16,890	16,816	16,635
207	Newton	Middlesex	83,622	82,140	81,219	79,910
208	Norfolk	Norfolk	6,363	7,930	8,531	9,188
209	North Adams	Berkshire	18,063	17,020	16,681	16,095
210	North Andover	Essex	20,129	22,390	23,924	25,401
211	North Attleborough	Bristol	21,095	23,460	25,720	29,040
212	North Brookfield	Worcester	4,150	4,270	4,290	4,313
213	North Reading	Middlesex	11,455	11,880	11,823	11,698
214	Northampton	Hampshire	29,286	28,360	29,064	30,615
215	Northborough	Worcester	10,568	11,320	11,378	11,438
216	Northbridge	Worcester	12,246	12,440	12,496	12,559
217	Northfield	Franklin	2,386	2,410	2,462	2,540
218	Norton	Bristol	12,690	13,710	14,627	15,633
219	Norwell	Plymouth	9,182	9,240	9,683	10,530
220	Norwood	Norfolk	29,711	28,220	27,336	26,146
221	Oak Bluffs	Dukes	1,984	2,340	2,562	2,940
222	Oakham	Worcester	994	1,270	1,487	1,808
223	Orange	Franklin	6,844	7,300	7,663	8,130
224	Orleans	Barnstable	5,306	6,050	6,605	7,539
225	Otis	Berkshire	963	980	980	958
226	Oxford	Worcester	11,680	12,330	12,485	12,604
227	Palmer	Hampden	11,389	11,800	11,900	11,897
228	Paxton	Worcester	3,762	3,830	3,833	3,829
229	Peabody	Essex	45,976	46,300	46,065	45,594
230	Pelham	Hampshire	1,112	1,360	1,436	1,550
231	Pembroke	Plymouth	13,487	14,540	15,620	17,415
232	Pepperell	Middlesex	8,061	9,630	10,610	11,674
233	Peru	Berkshire	633	810	823	812
234	Petersham	Worcester	1,024	1,000	950	897
235	Phillipston	Worcester	953	1,080	1,100	1,107
236	Pittsfield	Berkshire	51,974	49,580	48,737	47,165
237	Plainfield	Hampshire	425	460	485	521
238	Plainville	Norfolk	5,857	6,080	6,191	6,262
239	Plymouth	Plymouth	35,913	40,290	43,417	47,980
240	Plympton	Plymouth	1,974	2,290	2,472	2,744
241	Princeton	Worcester	2,425	2,900	3,007	3,086
242	Provincetown	Barnstable	3,536	3,500	3,490	3,676
243	Quincy	Norfolk	84,743	82,630	81,296	79,676
244	Randolph	Norfolk	28,218	28,580	28,566	28,437
245	Raynham	Bristol	9,085	9,510	9,800	10,134
246	Reading	Middlesex	22,678	22,550	22,448	22,205
247	Rehoboth	Bristol	7,570	8,490	9,172	10,162
248	Revere	Suffolk	42,423	43,510	44,308	44,965
249	Richmond	Berkshire	1,659	1,640	1,622	1,585
250	Rochester	Plymouth	3,205	3,980	4,461	5,111
251	Rockland	Plymouth	15,695	15,340	15,483	16,147
252	Rockport	Essex	6,345	6,690	6,661	6,592
253	Rowe	Franklin	336	380	415	462
254	Rowley	Essex	3,867	4,250	4,321	4,354

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Town No.	City	County	1980 Census Population	1986 Census Estimate	1990 MISER Projection	1995 MISER Projection
255	Royalston	Worcester	955	1,060	1,133	1,221
256	Russell	Hampden	1,570	1,620	1,612	1,589
257	Rutland	Worcester	4,334	4,670	4,750	4,807
258	Salem	Essex	38,276	38,050	37,552	36,854
259	Salisbury	Essex	5,973	7,270	7,960	8,779
260	Sandisfield	Berkshire	720	810	831	835
261	Sandwich	Barnstable	8,727	12,470	14,745	18,145
262	Saugus	Essex	24,746	25,860	26,060	26,216
263	Savoy	Berkshire	644	770	821	844
264	Scituate	Plymouth	17,317	16,960	17,391	18,485
265	Seekonk	Bristol	12,269	12,710	13,118	13,625
266	Sharon	Norfolk	13,601	14,660	15,068	15,463
267	Sheffield	Berkshire	2,743	2,660	2,640	2,559
268	Shelburne	Franklin	2,002	2,020	2,067	2,128
269	Sherborn	Middlesex	4,049	4,260	4,250	4,191
270	Shirley	Middlesex	5,124	5,550	5,949	6,468
271	Shrewsbury	Worcester	22,674	22,560	22,684	22,792
272	Shutesbury	Franklin	1,049	1,240	1,335	1,428
273	Somerset	Bristol	18,813	18,230	17,953	17,747
274	Somerville	Middlesex	77,372	72,280	71,300	70,032
275	South Hadley	Hampshire	16,399	16,230	16,747	17,792
276	Southampton	Hampshire	4,137	4,450	4,701	5,086
277	Southborough	Worcester	6,193	6,420	6,448	6,482
278	Southbridge	Worcester	16,665	16,520	16,398	16,240
279	Southwick	Hampden	7,382	7,920	7,998	7,971
280	Spencer	Worcester	10,774	11,540	11,753	11,932
281	Springfield	Hampden	152,319	149,410	145,380	139,872
282	Sterling	Worcester	5,440	6,550	7,260	8,247
283	Stockbridge	Berkshire	2,328	2,340	2,395	2,416
284	Stoneham	Middlesex	21,424	22,550	22,918	23,217
285	Stoughton	Norfolk	26,710	27,190	27,364	27,369
286	Stow	Middlesex	5,144	5,470	5,486	5,441
287	Sturbridge	Worcester	5,976	7,310	8,250	9,639
288	Sudbury	Middlesex	14,027	14,140	14,080	13,915
289	Sunderland	Franklin	2,929	2,930	2,991	3,093
290	Sutton	Worcester	5,855	6,590	6,943	7,284
291	Swampscott	Essex	13,837	13,330	12,544	11,504
292	Swansea	Bristol	15,461	15,790	16,052	16,445
293	Taunton	Bristol	45,001	45,760	47,119	48,905
294	Templeton	Worcester	6,070	6,050	6,078	6,106
295	Tewksbury	Middlesex	24,635	25,660	25,896	25,970
296	Tisbury	Dukes	2,972	3,480	3,784	4,328
297	Tolland	Hampden	235	260	267	265
298	Topsfield	Essex	5,709	5,550	5,518	5,463
299	Townsend	Middlesex	7,201	8,600	9,421	10,169
300	Truro	Barnstable	1,486	1,380	1,508	1,723
301	Tyngsborough	Middlesex	5,683	7,640	8,789	10,179
302	Tyringham	Berkshire	344	380	386	380
303	Upton	Worcester	3,886	4,270	4,378	4,484
304	Uxbridge	Worcester	8,374	8,950	9,185	9,519
305	Wakefield	Middlesex	24,895	25,170	25,057	24,784

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Town No.	City	County	1980 Census Population	1986 Census Estimate	1990 MISER Projection	1995 MISER Projection
306	Wales	Hampden	1,177	1,460	1,653	1,904
307	Walpole	Norfolk	18,859	19,720	20,522	21,503
308	Waltham	Middlesex	58,200	57,090	56,825	56,201
309	Ware	Hampshire	8,953	9,430	10,126	11,277
310	Wareham	Plymouth	18,457	20,340	21,906	24,318
311	Warren	Worcester	3,777	3,880	4,023	4,192
312	Warwick	Franklin	603	600	612	634
313	Washington	Berkshire	587	610	614	598
314	Watertown	Middlesex	34,384	32,890	32,616	32,177
315	Wayland	Middlesex	12,170	12,190	12,052	11,858
316	Webster	Worcester	14,480	15,090	15,157	15,227
317	Wellesley	Norfolk	27,209	26,550	26,538	26,422
318	Wellfleet	Barnstable	2,209	2,390	2,575	2,916
319	Wendell	Franklin	694	810	830	855
320	Wenham	Essex	3,897	3,810	3,788	3,751
321	West Boylston	Worcester	6,204	6,040	5,977	5,898
322	West Bridgewater	Plymouth	6,359	6,520	6,828	7,420
323	West Brookfield	Worcester	3,026	3,390	3,495	3,609
324	West Newbury	Essex	2,861	3,330	3,413	3,466
325	West Springfield	Hampden	27,042	26,800	26,636	26,182
326	West Stockbridge	Berkshire	1,280	1,310	1,294	1,258
327	West Tisbury	Dukes	1,010	1,250	1,392	1,613
328	Westborough	Worcester	13,619	13,210	12,954	12,701
329	Westfield	Hampden	36,465	37,710	37,981	37,693
330	Westford	Middlesex	13,434	15,210	15,353	15,333
331	Westhampton	Hampshire	1,137	1,340	1,505	1,739
332	Westminster	Worcester	5,139	5,480	5,578	5,648
333	Weston	Middlesex	11,169	10,700	10,646	10,518
334	Westport	Bristol	13,763	14,010	14,251	14,598
335	Westwood	Norfolk	13,212	12,580	12,099	11,482
336	Weymouth	Norfolk	55,601	54,480	54,320	53,954
337	Whately	Franklin	1,341	1,340	1,388	1,447
338	Whitman	Plymouth	13,534	13,350	13,965	15,147
339	Wilbraham	Hampden	12,053	12,420	12,341	12,150
340	Williamsburg	Hampshire	2,237	2,490	2,603	2,785
341	Williamstown	Berkshire	8,741	8,090	8,006	7,799
342	Wilmington	Middlesex	17,471	17,530	17,458	17,263
343	Winchendon	Worcester	7,019	7,710	8,163	8,802
344	Winchester	Middlesex	20,701	20,120	19,610	19,003
345	Windsor	Berkshire	598	620	621	610
346	Winthrop	Suffolk	19,294	18,640	18,712	18,786
347	Woburn	Middlesex	36,626	37,380	38,268	39,091
348	Worcester	Worcester	161,799	157,770	154,708	151,564
349	Worthington	Hampshire	932	1,150	1,339	1,634
350	Wrentham	Norfolk	7,580	8,590	9,511	10,815
351	Yarmouth	Barnstable	18,449	19,800	20,784	22,929

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Table S11 Supplemental Land Acreage Data by City and Town

Town #	City	County	Area (Sq.Miles)	Area Acres	SCORP Acres
1	Abington	Plymouth	10.0	6,400.0	810.5
2	Acton	Middlesex	20.0	12,774.4	2,472.9
3	Acushnet	Bristol	19.1	12,204.8	612.0
4	Adams	Berkshire	22.6	14,476.8	3,319.7
5	Agawam	Hampden	23.7	15,148.8	2,523.3
6	Alford	Berkshire	11.6	7,404.8	146.5
7	Amesbury	Essex	12.6	8,057.6	589.1
8	Amherst	Hampshire	27.5	17,619.2	4,248.3
9	Andover	Essex	31.2	19,968.0	3,967.2
10	Arlington	Middlesex	5.1	3,283.2	446.7
11	Ashburnham	Worcester	38.8	24,832.0	5,133.9
12	Ashby	Middlesex	23.7	15,142.4	1,291.3
13	Ashfield	Franklin	40.3	25,779.2	884.0
14	Ashland	Middlesex	23.4	14,969.6	1,525.8
15	Athol	Worcester	32.6	20,832.0	3,338.0
16	Attleboro	Bristol	26.6	16,998.4	591.4
17	Auburn	Worcester	15.3	9,811.2	1,069.2
18	Avon	Norfolk	4.5	2,892.8	74.2
19	Ayer	Middlesex	9.0	5,779.2	332.9
20	Barnstable	Barnstable	60.8	38,892.8	9,859.1
21	Barre	Worcester	45.0	28,787.2	21,952.2
22	Becket	Berkshire	46.9	30,028.8	3,273.8
23	Bedford	Middlesex	14.0	8,947.2	1,934.5
24	Belchertown	Hampshire	52.7	33,702.4	84,375.0
25	Bellingham	Norfolk	18.3	11,680.0	981.3
26	Belmont	Middlesex	4.5	2,892.8	419.3
27	Berkley	Bristol	16.3	10,400.0	248.8
28	Berlin	Worcester	13.0	8,326.4	429.0
29	Bernardston	Franklin	23.5	15,014.4	1,234.6
30	Beverly	Essex	14.9	9,536.0	1,253.6
31	Billerica	Middlesex	26.0	16,652.8	2,190.2
32	Blackstone	Worcester	10.8	6,918.4	1,025.3
33	Blandford	Hampden	52.7	33,728.0	10,125.2
34	Bolton	Worcester	19.8	12,697.6	1,093.1
35	Boston	Suffolk	47.3	30,259.2	8,471.3
36	Bourne	Barnstable	41.7	26,662.4	51,659.3
37	Boxborough	Middlesex	10.5	6,694.4	1,764.3
38	Boxford	Essex	24.0	15,347.2	1,221.4
39	Boylston	Worcester	15.8	10,131.2	447.1
40	Braintree	Norfolk	13.7	8,748.8	1,386.8
41	Brewster	Barnstable	22.9	14,630.4	4,005.1
42	Bridgewater	Plymouth	27.5	17,619.2	1,013.3
43	Brimfield	Hampden	35.4	22,636.8	4,608.1
44	Brockton	Plymouth	21.5	13,760.0	2,380.4
45	Brookfield	Worcester	15.5	9,932.8	192.6
46	Brookline	Norfolk	6.8	4,326.4	908.5
47	Buckland	Franklin	19.9	12,710.4	627.1
48	Burlington	Middlesex	11.8	7,558.4	1,003.0
49	Cambridge	Middlesex	6.3	4,000.0	2,689.5
50	Canton	Norfolk	19.3	12,352.0	1,988.6

Town #	City	County	Area (Sq.Miles)	Area Acres	SCORP Acres
51	Carlisle	Middlesex	15.4	9,856.0	2,034.1
52	Carver	Plymouth	41.0	26,240.0	2,368.6
53	Charlemont	Franklin	26.1	16,672.0	7,562.6
54	Charlton	Worcester	42.2	27,008.0	2,895.2
55	Chatham	Barnstable	16.1	10,329.6	20,917.4
56	Chelmsford	Middlesex	23.5	15,046.4	970.1
57	Chelsea	Suffolk	1.9	1,184.0	40.6
58	Cheshire	Berkshire	27.3	17,446.4	3,207.3
59	Chester	Hampden	36.8	23,526.4	7,719.0
60	Chesterfield	Hampshire	31.0	19,846.4	3,181.2
61	Chicopee	Hampden	22.5	14,380.8	1,392.9
62	Chilmark	Dukes	20.6	13,171.2	743.8
63	Clarksburg	Berkshire	12.7	8,128.0	3,372.0
64	Clinton	Worcester	5.6	3,609.6	5,870.5
65	Cohasset	Norfolk	9.4	6,028.8	1,148.9
66	Colrain	Franklin	43.2	27,654.4	3,410.0
67	Concord	Middlesex	25.1	16,038.4	7,306.8
68	Conway	Franklin	37.8	24,198.4	3,947.0
69	Cummington	Hampshire	23.0	14,726.4	1,845.0
70	Dalton	Berkshire	21.9	13,984.0	7,756.0
71	Danvers	Essex	12.8	8,204.8	627.0
72	Dartmouth	Bristol	59.5	38,054.4	3,356.7
73	Dedham	Norfolk	10.6	6,771.2	825.5
74	Deerfield	Franklin	31.9	20,435.2	1,443.3
75	Dennis	Barnstable	20.8	13,292.8	1,423.7
76	Dighton	Bristol	22.1	14,131.2	270.2
77	Douglas	Worcester	37.1	23,718.4	4,591.1
78	Dover	Norfolk	15.4	9,881.6	3,608.1
79	Dracut	Middlesex	20.6	13,171.2	1,258.9
80	Dudley	Worcester	21.0	13,414.4	554.8
81	Dunstabe	Middlesex	17.0	10,892.8	520.0
82	Duxbury	Plymouth	23.4	14,950.4	4,358.8
83	East Bridgewater	Plymouth	17.1	10,969.6	921.2
84	East Brookfield	Worcester	9.9	6,304.0	383.6
85	East Longmeadow	Hampden	13.0	8,300.8	420.1
86	Eastham	Barnstable	14.5	9,267.2	758.4
87	Easthampton	Hampshire	13.4	8,576.0	703.2
88	Easton	Bristol	29.0	18,534.4	8,841.2
89	Edgartown	Dukes	26.8	17,145.6	1,832.6
90	Egremont	Berkshire	18.8	12,012.8	1,990.8
91	Erving	Franklin	14.0	8,985.6	6,803.5
92	Essex	Essex	13.3	8,524.8	1,250.1
93	Everett	Middlesex	3.2	2,048.0	60.7
94	Fairhaven	Bristol	12.2	7,808.0	603.7
95	Fall River	Bristol	33.7	21,593.6	4,148.1
96	Falmouth	Barnstable	44.7	28,614.4	3,987.2
97	Fitchburg	Worcester	27.5	17,593.6	5,975.0
98	Florida	Berkshire	24.6	15,712.0	10,660.0
99	Foxborough	Norfolk	19.7	12,627.2	3,656.6
100	Framingham	Middlesex	24.9	15,936.0	3,397.6
101	Franklin	Norfolk	26.8	17,171.2	2,114.3
102	Freetown	Bristol	33.9	21,721.6	5,794.0

Town #	City	County	Area (Sq.Miles)	Area Acres	SCORP Acres
103	Gardner	Worcester	21.3	13,638.4	5,227.6
104	Gay Head	Dukes	6.0	3,852.8	550.6
105	Georgetown	Essex	13.0	8,300.8	1,724.4
106	Gill	Franklin	13.8	8,857.6	1,673.6
107	Gloucester	Essex	27.8	17,817.6	5,986.6
108	Goshen	Hampshire	17.3	11,078.4	1,931.0
109	Gosnold	Dukes	12.7	8,096.0	70.8
110	Grafton	Worcester	22.6	14,432.0	1,076.9
111	Granby	Hampshire	27.8	17,792.0	1,583.0
112	Granville	Hampden	43.2	27,648.0	8,670.0
113	Great Barrington	Berkshire	44.8	28,640.0	5,290.8
114	Greenfield	Franklin	22.7	14,528.0	1,418.6
115	Groton	Middlesex	32.9	21,049.6	3,614.5
116	Groveland	Essex	9.1	5,804.8	51.0
117	Hadley	Hampshire	24.6	15,737.6	837.3
118	Halifax	Plymouth	16.6	10,624.0	631.6
119	Hamilton	Essex	14.6	9,318.4	1,156.0
120	Hampden	Hampden	19.6	12,524.8	496.0
121	Hancock	Berkshire	35.6	22,752.0	2,541.0
122	Hanover	Plymouth	15.4	9,881.6	1,375.0
123	Hanson	Plymouth	14.9	9,561.6	449.1
124	Hardwick	Worcester	38.4	24,576.0	719.0
125	Harvard	Worcester	26.3	16,800.0	2,999.0
126	Harwich	Barnstable	21.2	13,568.0	1,605.8
127	Hatfield	Hampshire	15.8	10,080.0	500.0
128	Haverhill	Essex	31.8	20,332.8	2,597.2
129	Hawley	Franklin	31.0	19,833.6	8,599.1
130	Heath	Franklin	25.0	15,968.0	39.0
131	Hingham	Plymouth	22.5	14,380.8	5,893.7
132	Hinsdale	Berkshire	21.2	13,542.4	2,679.4
133	Holbrook	Norfolk	7.4	4,716.8	455.7
134	Holden	Worcester	34.8	22,284.8	2,291.5
135	Holland	Hampden	12.4	7,904.0	476.2
136	Holliston	Middlesex	18.9	12,108.8	1,508.1
137	Holyoke	Hampden	21.0	13,465.6	4,796.4
138	Hopedale	Worcester	5.2	3,308.8	366.3
139	Hopkinton	Middlesex	26.6	17,024.0	3,370.6
140	Hubbardston	Worcester	40.3	25,817.6	3,697.4
141	Hudson	Middlesex	11.8	7,558.4	696.2
142	Hull	Plymouth	2.7	1,728.0	293.5
143	Huntington	Hampshire	26.2	16,793.6	5,507.5
144	Ipswich	Essex	32.4	20,755.2	6,234.0
145	Kingston	Plymouth	19.0	12,179.2	1,741.8
146	Lakeville	Plymouth	29.6	18,924.8	4,978.3
147	Lancaster	Worcester	27.6	17,689.6	8,204.4
148	Lanesborough	Berkshire	29.0	18,534.4	12,204.0
149	Lawrence	Essex	6.6	4,249.6	225.6
150	Lee	Berkshire	26.3	16,825.6	17,436.2
151	Leicester	Worcester	23.1	14,777.6	2,492.0
152	Lenox	Berkshire	21.5	13,740.8	6,325.1
153	Leominster	Worcester	28.0	17,913.6	6,498.4
154	Leverett	Franklin	22.9	14,656.0	329.0

Town #	City	County	Area (Sq.Miles)	Area Acres	SCORP Acres
155	Lexington	Middlesex	17.1	10,918.4	2,076.9
156	Leyden	Franklin	18.1	11,577.6	100.0
157	Lincoln	Middlesex	14.3	9,139.2	2,520.5
158	Littleton	Middlesex	17.0	10,873.6	1,129.0
159	Longmeadow	Hampden	9.1	5,830.4	1,384.5
160	Lowell	Middlesex	12.9	8,256.0	664.2
161	Ludlow	Hampden	27.3	17,446.4	895.9
162	Lunenburg	Worcester	26.3	16,825.6	1,065.4
163	Lynn	Essex	10.4	6,668.8	2,289.4
164	Lynnfield	Essex	10.2	6,547.2	1,151.5
165	Malden	Middlesex	4.8	3,065.6	229.7
166	Manchester	Essex	7.8	4,966.4	969.1
167	Mansfield	Bristol	20.4	13,024.0	1,067.3
168	Marblehead	Essex	4.5	2,892.8	186.1
169	Marion	Plymouth	13.9	8,921.6	847.7
170	Marlborough	Middlesex	20.8	13,318.4	1,464.1
171	Marshfield	Plymouth	28.0	17,888.0	4,520.9
172	Mashpee	Barnstable	23.0	14,726.4	3,361.5
173	Mattapoisett	Plymouth	17.3	11,072.0	600.0
174	Maynard	Middlesex	5.2	3,308.8	235.2
175	Medfield	Norfolk	14.8	9,465.6	2,568.4
176	Medford	Middlesex	8.1	5,190.4	929.5
177	Medway	Norfolk	11.5	7,385.6	365.5
178	Melrose	Middlesex	4.7	2,988.8	295.0
179	Mendon	Worcester	17.8	11,392.0	405.2
180	Merrimac	Essex	8.5	5,414.4	721.5
181	Methuen	Essex	22.3	14,284.8	783.7
182	Middlebourough	Plymouth	69.7	44,576.0	3,643.9
183	Middlefield	Hampshire	24.1	15,443.2	1,987.1
184	Middleton	Essex	14.3	9,120.0	1,593.8
185	Milford	Worcester	15.3	9,760.0	416.0
186	Millbury	Worcester	15.4	9,881.6	613.3
187	Millis	Norfolk	12.1	7,712.0	753.4
188	Millville	Worcester	4.9	3,110.4	103.0
189	Milton	Norfolk	13.1	8,403.2	9,065.2
190	Monroe Bridge	Franklin	10.9	6,944.0	4,463.0
191	Monson	Hampden	45.5	29,107.2	1,559.0
192	Montague	Franklin	29.5	18,854.4	4,073.0
193	Monterey	Berkshire	26.6	16,992.0	11,723.9
194	Montgomery	Hampden	15.0	9,606.4	2,538.5
195	Mount Washington	Berkshire	22.2	14,220.8	8,595.7
196	Nahant	Essex	1.2	742.4	166.7
197	Nantucket	Nantucket	47.4	30,316.8	9,126.9
198	Natick	Middlesex	14.8	9,440.0	1,089.2
199	Needham	Norfolk	12.4	7,955.2	2,305.8
200	New Ashford	Berkshire	13.7	8,736.0	120.0
201	New Bedford	Bristol	18.7	11,980.8	2,751.4
202	New Braintree	Worcester	20.8	13,286.4	1,997.7
203	New Marlboro	Berkshire	47.9	30,624.0	2,072.8
204	New Salem	Franklin	45.0	28,825.6	330.0
205	Newbury	Essex	23.9	15,270.4	9,156.8
206	Newburyport	Essex	8.3	5,337.6	758.8

Town #	City	County	Area (Sq.Miles)	Area Acres	SCORP Acres
207	Newton	Middlesex	17.9	11,462.4	1,935.6
208	Norfolk	Norfolk	15.6	9,984.0	2,754.1
209	North Adams	Berkshire	20.7	13,241.6	1,923.0
210	North Andover	Essex	26.7	17,075.2	5,998.6
211	North Attleborough	Bristol	19.5	12,480.0	2,447.5
212	North Brookfield	Worcester	21.4	13,715.2	721.8
213	North Reading	Middlesex	13.2	8,473.6	800.6
214	Northampton	Hampshire	34.6	22,137.6	2,264.8
215	Northborough	Worcester	18.3	11,712.0	915.3
216	Northbridge	Worcester	17.5	11,193.6	3,247.4
217	Northfield	Franklin	34.2	21,875.2	14,815.6
218	Norton	Bristol	28.4	18,163.2	2,344.1
219	Norwell	Plymouth	20.3	12,998.4	1,327.7
220	Norwood	Norfolk	10.4	6,624.0	554.6
221	Oak Bluffs	Dukes	7.1	4,569.6	358.3
222	Oakham	Worcester	21.0	13,433.6	785.6
223	Orange	Franklin	34.7	22,214.4	1,186.0
224	Orleans	Barnstable	14.2	9,094.4	2,979.5
225	Otis	Berkshire	35.8	22,892.8	13,453.7
226	Oxford	Worcester	26.8	17,145.6	1,804.3
227	Palmer	Hampden	30.4	19,468.8	490.0
228	Paxton	Worcester	14.8	9,491.2	1,103.6
229	Peabody	Essex	16.5	10,553.6	1,990.0
230	Pelham	Hampshire	24.8	15,884.8	2,810.0
231	Pembroke	Plymouth	21.9	14,035.2	572.8
232	Pepperell	Middlesex	22.4	14,329.6	1,520.3
233	Peru	Berkshire	26.1	16,672.0	6,971.5
234	Petersham	Worcester	54.3	34,732.8	7,015.6
235	Phillipston	Worcester	23.7	15,168.0	3,634.6
236	Pittsfield	Berkshire	40.6	25,996.8	18,939.2
237	Plainfield	Hampshire	21.3	13,625.6	360.0
238	Plainville	Norfolk	11.5	7,379.2	641.0
239	Plymouth	Plymouth	91.4	58,508.8	22,043.6
240	Plympton	Plymouth	14.9	9,548.8	165.5
241	Princeton	Worcester	35.4	22,649.6	4,075.9
242	Provincetown	Barnstable	10.1	6,476.8	5,291.3
243	Quincy	Norfolk	16.7	10,700.8	961.4
244	Randolph	Norfolk	9.8	6,278.4	679.9
245	Raynham	Bristol	20.5	13,145.6	1,291.5
246	Reading	Middlesex	10.0	6,425.6	695.0
247	Rehoboth	Bristol	48.0	30,713.6	1,805.6
248	Revere	Suffolk	5.7	3,654.4	486.6
249	Richmond	Berkshire	19.0	12,128.0	1,170.0
250	Rochester	Plymouth	33.6	21,497.6	1,673.1
251	Rockland	Plymouth	9.9	6,348.8	617.6
252	Rockport	Essex	7.0	4,499.2	912.8
253	Rowe	Franklin	23.8	15,219.2	4,758.5
254	Rowley	Essex	18.5	11,859.2	2,196.2
255	Royalston	Worcester	42.0	26,873.6	5,327.7
256	Russell	Hampden	17.7	11,334.4	4,814.8
257	Rutland	Worcester	34.8	22,240.0	2,035.8
258	Salem	Essex	7.1	4,569.6	1,157.9

Town #	City	County	Area (Sq.Miles)	Area Acres	SCORP Acres
259	Salisbury	Essex	15.6	10,009.6	804.9
260	Sandisfield	Berkshire	52.5	33,606.4	10,729.0
261	Sandwich	Barnstable	43.7	27,968.0	14,199.3
262	Saugus	Essex	10.5	6,720.0	1,123.9
263	Savoy	Berkshire	36.0	23,059.2	976.0
264	Scituate	Plymouth	16.8	10,745.6	1,824.3
265	Seekonk	Bristol	19.4	12,428.8	805.3
266	Sharon	Norfolk	23.0	14,745.6	2,823.8
267	Sheffield	Berkshire	48.0	30,688.0	1,880.7
268	Shelburne	Franklin	23.2	14,860.8	746.5
269	Sherborn	Middlesex	15.7	10,054.4	1,510.8
270	Shirley	Middlesex	15.1	9,664.0	2,849.4
271	Shrewsbury	Worcester	20.7	13,222.4	1,925.5
272	Shutesbury	Franklin	26.7	17,075.2	1,543.0
273	Somerset	Bristol	7.9	5,043.2	348.9
274	Somerville	Middlesex	3.9	2,496.0	55.0
275	South Hadley	Hampshire	17.7	11,340.8	1,950.5
276	Southampton	Hampshire	28.9	18,483.2	511.6
277	Southborough	Worcester	14.0	8,966.4	2,700.0
278	Southbridge	Worcester	20.3	12,972.8	3,336.0
279	Southwick	Hampden	30.6	19,596.8	1,171.5
280	Spencer	Worcester	32.9	21,075.2	2,563.1
281	Springfield	Hampden	31.7	20,288.0	3,945.8
282	Sterling	Worcester	30.2	19,321.6	1,749.7
283	Stockbridge	Berkshire	22.4	14,355.2	3,093.1
284	Stoneham	Middlesex	6.2	3,955.2	3,526.0
285	Stoughton	Norfolk	16.3	10,451.2	517.4
286	Stow	Middlesex	17.8	11,392.0	3,271.6
287	Sturbridge	Worcester	37.8	24,217.6	3,961.1
288	Sudbury	Middlesex	24.4	15,590.4	2,673.6
289	Sunderland	Franklin	14.2	9,068.8	185.2
290	Sutton	Worcester	33.0	21,100.8	1,104.5
291	Swampscott	Essex	3.1	1,952.0	297.6
292	Swansea	Bristol	22.3	14,284.8	487.1
293	Taunton	Bristol	48.0	30,688.0	2,966.3
294	Templeton	Worcester	31.3	20,012.8	7,649.7
295	Tewksbury	Middlesex	21.2	13,568.0	1,840.6
296	Tisbury	Dukes	6.8	4,326.4	240.1
297	Tolland	Hampden	31.9	20,435.2	4,321.0
298	Topsfield	Essex	12.7	8,102.4	3,575.7
299	Townsend	Middlesex	32.7	20,953.6	8,259.2
300	Truro	Barnstable	20.7	13,248.0	2,830.6
301	Tyngsborough	Middlesex	16.5	10,572.8	1,542.6
302	Tyringham	Berkshire	18.8	12,012.8	2,172.3
303	Upton	Worcester	21.4	13,715.2	3,350.0
304	Uxbridge	Worcester	29.3	18,777.6	1,516.4
305	Wakefield	Middlesex	7.5	4,793.6	803.3
306	Wales	Hampden	16.2	10,374.4	1,981.0
307	Walpole	Norfolk	20.5	13,120.0	1,575.4
308	Waltham	Middlesex	12.4	7,955.2	1,386.8
309	Ware	Hampshire	34.4	21,990.4	401.2
310	Wareham	Plymouth	34.3	21,964.8	3,010.4

Town #	City	County	Area (Sq.Miles)	Area Acres	SCORP Acres
311	Warren	Worcester	27.3	17,491.2	753.0
312	Warwick	Franklin	37.2	23,801.6	1,896.6
313	Washington	Berkshire	38.2	24,448.0	308.0
314	Watertown	Middlesex	4.1	2,643.2	224.3
315	Wayland	Middlesex	15.4	9,856.0	2,421.3
316	Webster	Worcester	12.6	8,032.0	561.7
317	Wellesley	Norfolk	9.9	6,348.8	1,829.8
318	Wellfleet	Barnstable	20.5	13,100.8	5,075.4
319	Wendell	Franklin	31.7	20,256.0	9,277.8
320	Wenham	Essex	7.9	5,062.4	984.5
321	West Boylston	Worcester	12.9	8,230.4	629.2
322	West Bridgewater	Plymouth	15.4	9,836.8	1,679.2
323	West Brookfield	Worcester	21.1	13,491.2	2,071.2
324	West Newbury	Essex	13.8	8,844.8	2,878.9
325	West Springfield	Hampden	16.9	10,796.8	963.6
326	West Stockbridge	Berkshire	18.3	11,737.6	544.1
327	West Tisbury	Dukes	25.5	16,294.4	5,598.7
328	Westborough	Worcester	20.8	13,318.4	1,988.4
329	Westfield	Hampden	46.8	29,945.6	1,455.7
330	Westford	Middlesex	30.5	19,545.6	3,336.3
331	Westhampton	Hampshire	27.1	17,324.8	436.0
332	Westminster	Worcester	35.2	22,534.4	352.0
333	Weston	Middlesex	16.9	10,822.4	2,881.0
334	Westport	Bristol	51.3	32,838.4	1,313.5
335	Westwood	Norfolk	11.8	7,552.0	537.6
336	Weymouth	Norfolk	16.8	10,726.4	1,319.4
337	Whately	Franklin	20.5	13,094.4	1,068.2
338	Whitman	Plymouth	6.9	4,396.8	270.4
339	Wilbraham	Hampden	22.2	14,233.6	881.0
340	Williamsburg	Hampshire	25.6	16,364.8	1,165.7
341	Williamstown	Berkshire	46.8	29,920.0	5,603.0
342	Wilmington	Middlesex	17.3	11,046.4	1,163.7
343	Winchendon	Worcester	37.4	23,942.4	13,774.1
344	Winchester	Middlesex	6.1	3,904.0	1,242.7
345	Windsor	Berkshire	35.1	22,483.2	5,773.9
346	Winthrop	Suffolk	1.9	1,209.6	169.5
347	Woburn	Middlesex	12.9	8,275.2	1,083.5
348	Worcester	Worcester	37.4	23,942.4	4,202.5
349	Worthington	Hampshire	32.0	20,505.6	2,186.2
350	Wrentham	Norfolk	22.0	14,060.8	1,563.9
351	Yarmouth	Barnstable	24.4	15,590.4	2,200.5

Outdoor Recreation Demand Methodology

General estimates of the demand for outdoor recreation were based on actual and desired participation in specific outdoor recreation activities among tourists and residents of Massachusetts.

Demand estimates from residents were obtained through the Massachusetts Recreation Survey of 1987 (MRS87), a statewide survey using both probability and nonprobability samples. Similar estimates from tourists were beyond the scope of this contract, hence we used reports from the Massachusetts Office of Travel & Tourism as a basis for determining the impact of tourists on our outdoor recreation resources.

Demand Among Tourists

Because participation patterns for specific outdoor recreation activities are not available for tourists, we have assumed that they behave the same as residents of the state. Thus, the tourist becomes a temporary resident of the state and the population is adjusted to reflect tourist volume. Our method for adjusting the statewide population is detailed in Exhibit D1 (Demand Table 1).

Exhibit D1
Massachusetts Tourist Volume:

	1986
International Visitors	1,082,000
Domestic Visitors	22,400,000
Total Visitors	23,482,000
Less:	
Massachusetts Residents	3,500,000
Business Visitors	3,637,000
Net Visitors	16,345,000
Times:	
3.8 Nights per Visit	62,111,000
1.8 Persons in Party	111,800,000
Divided by:	
365 Days per Year	306,300

Statewide, the population was increased by 306,300 (5.3%) due to the presence of nonresident tourists who were here for pleasure or a combination of business and pleasure. The next step was to allocate these visitors among the seven SCORP regions.

Travel expenditures by county were aggregated by region, then adjusted to reflect the differential cost of travel among the regions. Using the most recent year (1986) for which statistics were available, we have allocated tourist volume among the SCORP regions. Our methodology is outlined below in Exhibit D2.

Exhibit D2
Regional Tourist Volume

Region	Travel Spending ($000s)	Adjust-ment Factor	Adjusted Travel Spending ($000s)	Percent Share of Tourists
Cape Cod	798,054	0.862	687,923	16.4%
Southeast	308,250	0.862	265,712	6.3%
Metro Boston	3,634,472	0.553	2,009,863	47.8%
Northeast	731,253	0.862	630,340	15.0%
Central	263,818	1.000	263,818	6.3%
Conn Valley	224,720	1.000	224,720	5.3%
Berkshire	120,985	1.000	120,985	2.9%
Massachusetts	$ 6,081,552		$ 4,203,360	100.0%

Sources: Travel & Tourism in Massachusetts: 1986. Massachusetts Office of Travel & Tourism. April 1988.
Travel in Massachusetts: Economic Impact and Visitor Profile. Massachusetts Office of Travel & Tourism.

We aggregated county travel expenditures to the seven SCORP regions. Four counties, Essex, Middlesex, Norfolk and Plymouth, were shared between two regions. The share attributed to each region was based on population. For example, 61% of Norfolk County's population is within the Metro Boston region, therefore 61% of that county's 1986 travel expenditures were allocated to the Metro Boston region, the remaining 39% going to the Southeast region.

Regional travel expenditures were expressed as a percent of the statewide total. The resulting figures were then adjusted based on the differential travel expenditures among the regions. Without such an adjustment, the greater expense of staying in Metro Boston will cause tourist volume there to be overestimated, while underestimated in the other regions.

The **Massachusetts Trend of Business: Lodging Industry**, a service of Laventhol & Horwath, Certified Public Accountants, reports in its December 1987 issue that the room sales per guest in Boston/Cambridge were $68.20, Suburban Boston $43.81 and Western Massachusetts $37.68. Expenditures representing 100 tourists in Western Massachusetts, represent only 86.2 tourists in Suburban Boston and 55.3 tourists in Metro Boston. We used these ratios to adjust the regional shares of statewide tourist volume.

The final step was to allocate the percent share of Massachusetts tourists to each of the regions as noted below in Exhibit D3. These population figures are used in subsequent analyses when we estimate activity days of demand by region.

Exhibit D3
Resident and Tourist Population by Region

Region	Percent Share of Tourists	Tourist Population	Tourist Resident Population	Percent of Region
Cape Cod	16.4%	50,233	187,510	21.1%
Southeast	6.3%	19,297	1,112,260	1.7%
Metro Boston	47.8%	146,411	1,841,690	7.4%
Northeast	15.0%	45,945	1,235,740	3.6%
Central	6.3%	19,297	661,110	2.8%
Conn Valley	5.3%	16,234	652,310	2.4%
Berkshire	2.9%	8,883	141,300	5.9%
Massachusetts	100.0%	306,300	5,831,920	5.0%

Demand Among Residents

The demand survey was developed to answer specific questions on the demand for recreation. Who? Does what? How often? Where? How satisfied? The information derived gives reasonable estimates of the demand for outdoor recreation in the general population. These estimates are based on interviews with a cross-section of residents eighteen years of age or older.

A probability sample of 2,990 residents was obtained using random digit dialing procedures developed by the Atlantic Marketing Research Company. The sample was stratified by county, resulting in fourteen strata ranging in size from 103 to 305.

The accuracy with which a probability sample represents the population from which it is drawn is a function of sample size and the percent of the respondents giving a specific answer to a question. The result is a confidence interval describing the accuracy, as plus-or-minus a known percent, with which the sample represents the population from which it was drawn. Exhibit D4 approximates the sampling error to be found in the demand survey.

Exhibit D4
Demand Survey Approximate Sampling Error
95 Percent Level of Confidence

	For Percentages Near				
Sample Size	5 95	10 90	15 85	25 75	50 50
100	4.3	5.9	7.0	8.5	9.8
200	3.1	4.2	5.0	6.1	7.0
300	2.5	3.4	4.1	4.9	5.7
400	2.2	3.0	3.5	4.3	5.0
500	2.0	2.7	3.2	3.8	4.4
750	1.6	2.2	2.6	3.1	3.6
1000	1.4	1.9	2.3	2.7	3.1
1500	1.2	1.6	1.9	2.2	2.6
2000	1.0	1.4	1.6	1.9	2.2
3000	0.8	1.1	1.3	1.6	1.8

Because the probability sample would not yield sufficient numbers of Blacks, Hispanics and persons with disabilities, three nonprobability samples were developed. Reverse telephone directories were used to obtain samples from neighborhoods in Boston, Worcester and Springfield known to have high concentrations of Blacks and Hispanics, resulting in completed interviews with an additional 304 Blacks and 310 Hispanics. The State Office of Handicapped affairs provided the telephone numbers of individuals with disabilities, resulting in an additional 160 completed interviews.

These nonprobability samples do not have a known margin of error, but can be used in a general way to describe the populations from which they are drawn. The probability and nonprobability samples are summarized below in Exhibit D5.

Exhibit D5
Probability and Nonprobability Samples

Population Subgroup	Probability Sample	Nonprobability Samples	Totals
White	2,848		2,848
Black	66	304	370
Hispanic	23	310	333
Unspecified	53	53	
Handicapped	93*	160**	253
Totals	2,990		3,740

* Already counted as White, Black, Hispanic or Unspecified
** Includes 16 Black and 8 Hispanic persons

The questionnaire was developed by Atlantic Research Company with extensive assistance from EOEA agency staff, advisors and colleagues at the University of Massachusetts. A key difference between this questionnaire and those of prior SCORP surveys is the use of open ended questions to determine participation. The check lists previously used tend to inflate participation levels, whereas the open ended questions determine the activities in which respondents most often participate. While this is a more conservative approach to demand estimation, respondents were asked to list up to four warm weather and four cold weather activities in which they often participated. A copy of the questionnaire is included in this Appendix.

All interviewing was completed by Atlantic Research Company from its phone center in Boston during August and September of 1987. The interviews were carried out primarily on weekdays between 5:00 and 9:30 PM. Alternate times, weekday and weekend mornings & afternoons, were used to assure the inclusion of respondents who were not available during weekday evenings. Interviews were completed with sixty-six percent of eligible households. The final disposition of the telephone interviews is detailed in Exhibit D6.

Exhibit D6
Disposition of Telephone Interviews

Total Number of Contacts	8,075
Ineligible	3,538
Not in Service	2,348
Business Phone	956
Age Under 18	234
Eligible	4,537
Incomplete 1683	
No Answer After 5 Callbacks	893
Busy After 5 Callbacks	87
Refusal or Termination	703
Complete	2,990

Interviews were completed without coding responses. To assure consistency, coders were briefed on how to interpret responses to the questionnaire. They reviewed each questionnaire and used a predetermined coding scheme to assign a numeric code to each response. Once coding was complete, the numeric codes for each questionnaire were entered into computer files. Random audits on approximately ten percent of the questionnaires were used to assure accuracy. In addition, range checks were used to further clean the data set, thus assuring that it represents the population from which it is drawn with a known level of accuracy.

Statistical Tables

The following seven sets of tables present detailed information on the several elements of recreation demand from geographic and demographic perspectives. The reader is cautioned to note the sample size (N) on which reported figures are based lest conclusions be drawn from an inadequate information base. The tables are grouped as follows:

Tables D 1 - D 6	County
Tables D 7 - D12	Income
Tables D13 - D18	Gender
Tables D19 - D24	Children at Home
Tables D25 - D30	Region
Tables D31 - D36	Age Group
Tables D37 - D42	Education Level

A copy of the complete demand questionnaire follows Table 42.

Table D1
Percent Often Participating by County

COUNTY	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
Barnstable	38.6%	16.2%	60.0%	13.3%	7.1%	11.0%	10.0%	3.8%	2.4%	2.4%	4.8%	11.9%	10.5%	4.3%
N	210	210	210	210	210	210	210	210	210	210	210	210	210	210
Berkshire	48.0%	5.6%	46.7%	6.0%	5.6%	7.3%	3.6%	2.6%	3.0%	5.6%	1.7%	16.2%	8.3%	8.3%
N	302	302	302	302	302	302	302	302	302	302	302	302	302	302
Bristol	40.7%	4.9%	53.9%	7.8%	3.9%	8.3%	5.9%	5.4%	0.0	0.0	4.9%	11.8%	2.5%	5.4%
N	204	204	204	204	204	204	204	204	204	204	204	204	204	204
Dukes	30.1%	11.4%	48.8%	11.4%	13.8%	7.3%	7.3%	2.4%	3.3%	.8%	.8%	12.2%	6.5%	2.4%
N	123	123	123	123	123	123	123	123	123	123	123	123	123	123
Essex	33.6%	8.7%	44.4%	14.4%	6.5%	7.6%	8.3%	8.7%	1.4%	3.6%	4.0%	16.2%	7.9%	7.9%
N	277	277	277	277	277	277	277	277	277	277	277	277	277	277
Franklin	23.6%	7.3%	52.7%	12.7%	12.3%	3.2%	5.0%	4.1%	2.7%	6.8%	9.5%	10.0%	9.5%	8.2%
N	220	220	220	220	220	220	220	220	220	220	220	220	220	220
Hampden	33.2%	4.7%	39.8%	7.6%	6.6%	7.6%	11.4%	5.7%	8.1%	2.8%	6.6%	10.9%	5.7%	5 2%
N	211	211	211	211	211	211	211	211	211	211	211	211	211	211
Hampshire	28.6%	13.1%	46.1%	12.1%	5.8%	6.8%	6.8%	8.3%	5.3%	10.7%	11.7%	12.6%	15.0%	8.3%
N	206	206	206	206	206	206	206	206	206	206	206	206	206	206
Middlesex	23.8%	6.9%	52.5%	14.4%	11.9%	5.0%	5.4%	7.9%	1.5%	8.4%	7.4%	20.8%	10.9%	11.9%
N	202	202	202	202	202	202	202	202	202	202	202	202	202	202
Nantucket	27.2%	12.6%	51.5%	14.6%	15.5%	10.7%	9.7%	2.9%	5.8%	1.0%	1.0%	8.7%	7.8%	5.8%
N	103	103	103	103	103	103	103	103	103	103	103	103	103	103
Norfolk	32.4%	8.3%	53.9%	16.2%	2.5%	16.7%	9.3%	5.9%	1.5%	6.4%	4.4%	24.5%	9.3%	10.8%
N	204	204	204	204	204	204	204	204	204	204	204	204	204	204
Plymouth	23.9%	10.5%	48.3%	10.5%	2.9%	9.6%	6.2%	5.7%	3.8%	1.9%	7.7%	14.8%	5.3%	8.6%
N	209	209	209	209	209	209	209	209	209	209	209	209	209	209
Suffolk	40.3%	8.5%	47.3%	5.5%	4.0%	8.0%	2.5%	9.0%	5.5%	2.5%	3.0%	18.4%	3.5%	7.5%
N	201	201	201	201	201	201	201	201	201	201	201	201	201	201
Worcester	26.1%	8.8%	50.2%	7.2%	6.2%	4.9%	7.8%	8.5%	2.9%	3.6%	7.5%	12.1%	4.9%	7.8%
N	307	307	307	307	307	307	307	307	307	307	307	307	307	307
TOTAL	32.7%	8.8%	49.5%	10.6%	6.9%	7.9%	6.9%	6.0%	3.2%	4.3%	5.6%	14.6%	7.7%	7.6%
N	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979

Table D2
Median Annual Days of Participation by County

COUNTY	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
Barnstable	78.00	36.00	42.50	15.00	24.00	26.00	40.00	10.00	50.00	6.00	3.50	7.00	6.50	11.00
N	79	33	120	27	15	23	20	8	5	5	10	25	22	8
Berkshire	100.00	51.00	51.00	16.50	20.00	30.00	20.00	35.00	9.00	11.00	4.00	15.00	10.00	15.00
N	137	18	126	18	13	20	11	7	8	16	5	48	23	24
Bristol	78.00	38.00	42.50	25.00	12.00	40.00	28.00	30.50	.	.	10.00	12.50	12.00	20.00
N	79	10	106	15	5	15	12	10	0	0	10	23	3	11
Dukes	182.00	78.00	52.00	22.50	20.00	20.00	26.00	17.00	58.50	2.00	15.00	4.00	12.00	26.00
N	37	11	59	14	17	7	9	2	4	1	1	15	8	3
Essex	52.00	30.00	20.00	15.00	10.00	30.00	15.00	20.00	3.00	5.50	5.00	10.00	8.00	8.00
N	93	24	118	39	17	20	23	22	4	10	11	45	21	20
Franklin	78.00	25.00	26.00	10.00	15.00	20.00	20.00	25.00	5.50	10.00	6.50	5.00	6.00	10.00
N	47	16	106	27	23	7	11	8	4	13	20	21	20	18
Hampden	182.00	52.00	30.00	8.00	12.50	26.00	25.50	25.00	12.00	9.00	5.00	7.00	6.00	6.00
N	68	10	80	15	12	16	24	12	17	6	13	23	10	11
Hampshire	52.00	52.00	40.00	15.00	17.50	25.00	20.00	20.00	15.00	17.50	10.00	12.00	12.00	9.00
N	57	27	89	24	10	13	14	15	11	22	23	25	29	16
Middlesex	78.00	16.00	25.00	12.00	15.00	13.50	20.00	24.00	20.00	12.00	10.00	18.00	6.00	6.00
N	48	14	102	29	22	10	11	15	3	17	15	42	22	24
Nantucket	70.00	50.00	50.00	25.00	15.00	26.50	12.00	26.00	15.00	50.00	.	12.50	3.00	9.00
N	27	13	49	13	15	10	9	3	5	1	0	8	7	6
Norfolk	78.00	26.00	20.00	16.00	5.00	28.00	24.50	43.00	6.00	6.00	7.50	7.00	8.00	10.00
N	63	17	106	31	5	33	18	10	3	13	8	49	19	19
Plymouth	52.00	20.00	30.00	13.50	10.00	20.00	25.00	25.00	11.00	10.00	14.00	6.00	6.00	5.00
N	47	21	101	22	5	19	13	10	8	4	15	31	11	15
Suffolk	78.00	26.50	20.00	12.50	12.50	17.50	5.00	26.00	13.00	6.00	3.00	10.00	3.00	10.00
N	74	17	87	10	8	16	5	15	10	5	5	36	7	13
Worcester	52.00	25.00	30.00	20.00	12.00	12.00	30.00	20.00	5.00	7.00	6.00	10.00	5.00	5.50
N	77	27	148	21	17	15	24	26	9	11	23	37	15	24
TOTAL	78.00	30.00	30.00	15.00	15.00	25.00	24.00	24.00	12.00	10.00	6.00	10.00	8.00	10.00
N	933	256	1395	305	184	224	204	183	91	124	159	428	217	212

Table D3
Median Minutes Traveled to Participate by County

COUNTY	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
Barnstable	10.00	10.00	5.00	10.00	12.50	5.00	10.00	10.00	18.50	135.00	180.00	180.00	17.50	10.00
N	77	33	124	26	16	23	21	8	5	5	9	24	22	9
Berkshire	20.00	.	15.00	45.00	20.00	15.00	15.00	15.00	20.00	15.00	195.00	75.00	20.00	15.00
N	140	17	140	18	13	22	11	7	9	17	4	49	24	23
Bristol	30.00	.	22.50	120.00	60.00	10.00	15.00	10.00	.	.	90.00	150.00	90.00	10.00
N	82	8	108	18	8	17	12	10	0	0	10	23	5	11
Dukes	30.00	20.00	10.00	10.00	15.00	7.50	10.00	10.00	15.00	30.00	.	240.00	75.00	15.00
N	36	11	58	13	17	9	9	3	4	1	0	12	7	3
Essex	15.00	52.50	15.00	22.50	20.00	12.50	15.00	10.00	15.00	90.00	120.00	120.00	110.50	5.00
N	88	23	123	39	16	21	23	22	4	10	11	45	20	22
Franklin	10.00	20.00	15.00	20.00	10.00	7.50	17.50	10.00	20.00	10.00	90.00	45.00	15.00	12.50
N	50	16	116	28	25	7	11	9	6	15	20	22	20	18
Hampden	30.00	30.00	20.00	40.00	35.00	7.50	15.00	17.50	112.50	62.50	75.00	52.50	25.00	10.00
N	69	10	82	16	13	16	24	12	17	6	13	22	12	11
Hampshire	20.00	20.00	20.00	30.00	60.00	15.00	15.00	5.00	20.00	20.00	77.50	90.00	20.00	10.00
N	57	27	94	24	10	14	14	15	11	22	23	26	28	17
Middlesex	20.00	37.50	15.00	35.00	20.00	6.00	30.00	10.00	.	70.00	120.00	60.00	30.00	20.00
N	48	13	93	25	20	10	10	13	3	14	14	34	19	22
Nantucket	25.00	30.00	5.00	10.00	15.00	10.00	6.50	10.50	11.00	60.00	5.00	240.00	25.00	5.00
N	26	12	53	13	14	11	10	3	5	1	1	9	7	6
Norfolk	12.50	.	30.00	90.00	60.00	5.00	17.50	12.50	42.50	135.00	45.00	150.00	22.50	5.00
N	53	14	107	30	6	34	18	10	2	11	8	60	16	21
Plymouth	5.00	10.00	20.00	15.00	25.00	10.00	20.00	7.50	10.00	180.00	60.00	122.50	30.00	10.00
N	47	18	99	21	6	20	13	10	8	4	16	31	11	16
Suffolk	20.00	15.00	25.00	67.50	25.00	15.00	20.00	10.00	15.00	15.00	120.00	120.00	45.00	15.00
N	81	17	94	10	8	16	5	17	11	5	6	36	7	13
Worcester	15.00	30.00	30.00	57.50	20.00	5.00	17.50	5.00	57.50	120.00	105.00	45.00	20.00	10.00
N	78	24	152	22	17	15	24	26	9	9	21	37	15	24
TOTAL	20.00	20.00	15.00	25.00	20.00	10.00	15.00	10.00	20.00	30.00	120.00	120.00	30.00	10.00
N	930	243	1441	301	184	235	205	165	94	120	165	419	213	218

Table D4
Percent Wanting More Participation by County

COUNTY	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
Barnstable	1.0%	1.0%	3.8%	2.4%	0.0	.5%	1.4%	0.0	0.0	1.0%	1.0%	5.2%	0.0	3.3%
N	210	210	210	210	210	210	210	210	210	210	210	210	210	210
Berkshire	.3%	.3%	3.0%	1.7%	.7%	.7%	1.0%	1.3%	.3%	0.0	.7%	3.0%	.3%	1.7%
N	302	302	302	302	302	302	302	302	302	302	302	302	302	302
Bristol	1.5%	0.0	.5%	1.0%	0.0	.5%	.5%	1.5%	0.0	0.0	0.0	3.4%	0.0	1.0%
N	204	204	204	204	204	204	204	204	204	204	204	204	204	204
Dukes	2.4%	5.7%	4.1%	4.1%	4.1%	4.1%	3.3%	0.0	0.0	0.0	.8%	8.9%	1.6%	3.3%
N	123	123	123	123	123	123	123	123	123	123	123	123	123	123
Essex	1.8%	2.5%	5.8%	3.2%	.4%	2.5%	1.4%	1.4%	0.0	0.0	0.0	2.5%	2.2%	1.8%
N	277	277	277	277	277	277	277	277	277	277	277	277	277	277
Franklin	0.0	.5%	3.6%	.5%	.9%	0.0	.5%	0.0	0.0	.9%	0.0	3.2%	.5%	.5%
N	220	220	220	220	220	220	220	220	220	220	220	220	220	220
Hampden	0.0	.9%	4.7%	3.8%	.9%	2.4%	1.9%	1.9%	0.0	.9%	.5%	6.6%	1.9%	.9%
N	211	211	211	211	211	211	211	211	211	211	211	211	211	211
Hampshire	1.5%	1.0%	4.9%	1.9%	1.0%	1.5%	.5%	0.0	0.0	1.5%	3.9%	3.9%	1.0%	1.5%
N	206	206	206	206	206	206	206	206	206	206	206	206	206	206
Middlesex	3.0%	2.5%	5.4%	3.5%	3.0%	3.0%	3.5%	.5%	1.0%	1.0%	1.0%	5.4%	2.5%	3.0%
N	202	202	202	202	202	202	202	202	202	202	202	202	202	202
Nantucket	1.0%	0.0	7.8%	4.9%	0.0	3.9%	0.0	1.0%	1.0%	0.0	0.0	1.9%	2.9%	3.9%
N	103	103	103	103	103	103	103	103	103	103	103	103	103	103
Norfolk	2.0%	2.9%	3.9%	2.5%	.5%	2.0%	1.0%	.5%	0.0	1.5%	1.5%	2.5%	0.0	.5%
N	204	204	204	204	204	204	204	204	204	204	204	204	204	204
Plymouth	.5%	1.0%	3.8%	1.0%	1.9%	1.4%	1.0%	.5%	.5%	.5%	1.0%	6.2%	1.0%	1.0%
N	209	209	209	209	209	209	209	209	209	209	209	209	209	209
Suffolk	1.0%	4.5%	7.5%	6.5%	.5%	6.5%	2.5%	1.0%	.5%	0.0	1.0%	6.5%	1.0%	.5%
N	201	201	201	201	201	201	201	201	201	201	201	201	201	201
Worcester	2.3%	2.9%	5.9%	2.6%	2.0%	1.3%	.3%	1.6%	0.0	.3%	.7%	6.2%	2.3%	3.3%
N	307	307	307	307	307	307	307	307	307	307	307	307	307	307
TOTAL	1.3%	1.8%	4.5%	2.7%	1.1%	1.9%	1.3%	.9%	.2%	.5%	.8%	4.6%	1.2%	1.8%
N	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979

Table D5
Percent Dissatisfied With Opportunities by County

COUNTY	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
Barnstable	20.4%	14.3%	12.5%	7.7%	18.2%	22.2%	6.3%	0.0	.	0.0	57.1%	71.4%	31.6%	40.0%
N	49	7	88	13	11	9	16	2	0	3	7	21	19	5
Berkshire	5.2%	16.7%	8.6%	14.3%	30.0%	7.1%	0.0	0.0	0.0	0.0	33.3%	20.0%	4.5%	0.0
N	116	6	105	7	10	14	5	5	1	8	3	45	22	19
Bristol	5.9%	0.0	11.6%	16.7%	0.0	0.0	0.0	0.0	.	.	0.0	82.6%	20.0%	9.1%
N	68	4	86	12	3	9	8	6	0	0	6	23	5	11
Dukes	3.2%	0.0	22.4%	0.0	12.5%	50.0%	12.5%	.	0.0	0.0	.	57.1%	42.9%	0.0
N	31	5	49	11	8	2	8	0	2	1	0	14	7	3
Essex	21.7%	0.0	34.4%	39.1%	66.7%	16.7%	25.0%	36.4%	100.0%	50.0%	66.7%	48.8%	43.8%	20.0%
N	69	8	90	23	9	12	12	11	1	2	3	41	16	15
Franklin	22.9%	60.0%	34.4%	33.3%	20.0%	33.3%	0.0	0.0	0.0	0.0	25.0%	31.6%	5.9%	37.5%
N	35	5	90	6	15	3	7	2	2	3	12	19	17	8
Hampden	14.3%	0.0	28.4%	11.1%	0.0	33.3%	0.0	0.0	30.0%	0.0	12.5%	40.9%	8.3%	55.6%
N	49	1	67	9	7	9	14	6	10	2	8	22	12	9
Hampshire	17.5%	23.1%	26.9%	41.7%	25.0%	20.0%	28.6%	0.0	0.0	12.5%	44.4%	40.0%	13.8%	80.0%
N	40	13	67	12	4	5	7	4	4	8	18	20	29	5
Middlesex	40.0%	42.9%	38.6%	47.1%	25.0%	20.0%	16.7%	50.0%	0.0	44.4%	16.7%	52.5%	33.3%	50.0%
N	35	7	88	17	16	5	6	4	1	9	6	40	18	18
Nantucket	9.5%	20.0%	9.3%	0.0	12.5%	40.0%	25.0%	0.0	50.0%	.	0.0	75.0%	50.0%	0.0
N	21	5	43	10	8	5	4	2	2	0	1	8	8	4
Norfolk	15.4%	20.0%	36.4%	18.8%	100.0%	5.9%	10.0%	0.0	50.0%	33.3%	0.0	40.9%	31.3%	16.7%
N	39	5	66	16	1	17	10	4	2	6	3	44	16	12
Plymouth	17.2%	42.9%	29.4%	23.1%	25.0%	20.0%	16.7%	28.6%	20.0%	0.0	50.0%	53.6%	55.6%	0.0
N	29	7	85	13	4	10	6	7	5	1	8	28	9	8
Suffolk	11.0%	0.0	28.8%	33.3%	0.0	55.6%	50.0%	30.8%	33.3%	0.0	.	73.0%	42.9%	15.4%
N	73	7	66	6	3	9	2	13	9	2	0	37	7	13
Worcester	21.9%	0.0	30.0%	16.7%	40.0%	14.3%	26.7%	0.0	28.6%	25.0%	40.0%	23.5%	44.4%	28.6%
N	64	5	120	12	5	7	15	13	7	4	10	34	9	14
TOTAL	14.9%	18.8%	25.4%	23.4%	24.0%	19.8%	13.3%	15.2%	26.1%	18.4%	32.9%	47.7%	26.3%	24.3%
N	718	85	1110	167	104	116	120	79	46	49	85	396	194	144

Table D6
Percent Participating on Weekends by County

COUNTY	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
Barnstable	28.00	30.00	40.00	85.00	50.00	40.00	10.00	64.00	.	30.00	98.00	62.50	67.50	10.00
N	49	7	86	13	10	9	15	2	0	3	7	20	19	5
Berkshire	50.00	50.00	50.00	60.00	50.00	42.50	50.00	35.00	.	62.50	47.50	45.00	50.00	40.00
N	114	6	103	7	10	14	5	5	0	8	3	45	22	18
Bristol	50.00	50.00	50.00	80.00	40.00	40.00	80.00	32.50	.	.	80.00	40.00	45.00	30.00
N	68	4	84	12	3	9	8	6	0	0	6	22	4	11
Dukes	50.00	50.00	50.00	60.00	50.00	50.00	50.00	.	74.00	50.00	.	70.00	50.00	80.00
N	32	5	50	11	7	2	7	0	2	1	0	13	7	3
Essex	26.50	40.00	50.00	50.00	75.00	40.00	60.00	50.00	98.00	90.00	50.00	90.00	90.00	50.00
N	64	8	87	23	8	12	11	11	1	2	3	41	15	14
Franklin	25.00	37.50	50.00	47.50	10.00	85.00	77.50	15.00	10.00	40.00	50.00	65.00	90.00	85.00
N	32	5	87	6	15	4	7	2	2	3	12	19	17	8
Hampden	50.00	10.00	65.00	90.00	50.00	75.00	80.00	60.00	98.00	75.00	98.00	98.00	98.00	85.00
N	47	1	65	9	7	8	15	6	10	2	8	22	10	9
Hampshire	40.00	30.00	50.00	75.00	45.00	20.00	50.00	27.50	98.00	65.00	77.50	50.00	30.00	37.50
N	37	13	65	12	4	5	7	4	4	7	18	19	26	4
Middlesex	30.00	50.00	50.00	92.50	75.00	50.00	75.00	50.00	75.00	94.00	50.00	72.50	98.00	85.00
N	33	7	87	17	15	5	5	4	1	8	5	39	17	18
Nantucket	50.00	27.50	50.00	80.00	50.00	50.00	50.00	98.00	40.00	.	50.00	90.00	86.50	65.00
N	17	5	39	11	7	5	4	1	2	0	1	8	8	4
Norfolk	35.00	20.00	50.00	82.50	45.00	40.00	35.00	25.00	30.00	55.00	95.00	90.00	50.00	20.00
N	43	5	76	15	1	17	10	4	2	6	3	46	16	13
Plymouth	40.00	55.00	50.00	80.00	70.00	20.00	30.00	50.00	50.00	98.00	98.00	98.00	98.00	82.50
N	28	6	84	13	4	9	5	7	5	1	8	28	9	8
Suffolk	20.00	50.00	50.00	60.00	98.00	50.00	75.00	98.00	90.00	94.00	.	80.00	98.00	98.00
N	72	7	67	6	3	9	2	13	9	2	0	37	7	13
Worcester	25.00	40.00	50.00	75.00	75.00	25.00	50.00	50.00	80.00	74.00	98.00	80.00	95.00	50.00
N	59	5	116	12	5	6	15	13	7	4	9	31	9	13
TOTAL	45.00	50.00	50.00	80.00	50.00	50.00	50.00	50.00	80.00	75.00	80.00	75.00	75.00	50.00
N	695	84	1096	167	99	114	116	78	45	47	83	390	186	141

Table D7
Percent Often Participating by Income

INCOME	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
LT $20,000	36.8%	5.1%	35.2%	5.2%	4.9%	3.0%	3.7%	3.5%	4.8%	2.9%	5.1%	6.2%	3.7%	3.8%
N	630	630	630	630	630	630	630	630	630	630	630	630	630	630
$20-$30,000	32.0%	8.5%	54.0%	11.7%	9.5%	5.8%	5.3%	6.3%	2.4%	4.7%	8.4%	12.1%	7.4%	8.8%
N	622	622	622	622	622	622	622	622	622	622	622	622	622	622
$30-$40,000	32.0%	12.1%	56.1%	10.9%	7.6%	6.6%	7.0%	7.4%	3.7%	3.5%	6.1%	15.4%	8.8%	8.2%
N	512	512	512	512	512	512	512	512	512	512	512	512	512	512
$40-$50,000	26.8%	11.5%	61.1%	12.4%	4.5%	9.2%	7.6%	5.4%	2.5%	7.0%	6.1%	20.7%	8.9%	8.9%
N	314	314	314	314	314	314	314	314	314	314	314	314	314	314
OVER $50,000	29.9%	10.9%	52.8%	18.7%	7.3%	18.5%	14.1%	8.5%	2.4%	5.6%	4.1%	24.6%	12.2%	10.2%
N	411	411	411	411	411	411	411	411	411	411	411	411	411	411
DK-REFUSE	34.9%	6.9%	44.9%	8.0%	6.7%	8.4%	6.7%	5.7%	2.9%	3.5%	3.1%	16.7%	7.3%	6.9%
N	490	490	490	490	490	490	490	490	490	490	490	490	490	490
TOTAL	32.7%	8.8%	49.5%	10.6%	6.9%	7.9%	6.9%	6.0%	3.2%	4.3%	5.6%	14.6%	7.7%	7.6%
N	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979

Table D8
Median Annual Days of Participation by Income

INCOME	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
LT $20,000	75.00	30.00	25.00	12.00	20.00	12.50	25.50	13.50	10.00	10.00	6.00	7.50	11.00	6.00
N	225	30	212	33	29	18	22	20	29	17	32	33	22	23
$20-$30,000	78.00	29.00	26.00	10.00	15.00	20.00	20.00	20.00	11.00	10.00	10.00	6.00	9.00	8.00
N	190	53	322	71	55	36	32	36	14	28	50	75	45	50
$30-$40,000	78.00	30.00	30.00	12.00	15.00	25.00	20.00	30.00	20.50	11.00	6.00	10.00	10.00	10.00
N	157	59	260	53	35	34	36	36	18	18	31	75	43	39
$40-$50,000	78.00	30.00	30.00	16.00	24.50	22.50	25.00	30.00	7.00	11.00	6.00	10.00	5.00	6.00
N	82	36	186	37	12	26	24	16	8	22	19	64	27	27
OVER $50,000	78.00	30.00	34.50	20.00	13.00	30.00	25.00	20.00	22.00	10.00	3.00	12.00	6.50	9.00
N	116	44	206	76	27	73	57	33	10	23	14	101	46	42
DK-REFUSE	100.00	30.00	30.00	25.00	15.00	30.00	24.00	28.00	9.00	8.50	6.00	10.00	8.00	12.00
N	163	34	209	35	26	37	33	22	12	16	13	80	34	31
TOTAL	78.00	30.00	30.00	15.00	15.00	25.00	24.00	24.00	12.00	10.00	6.00	10.00	8.00	10.00
N	933	256	1395	305	184	224	204	183	91	124	169	428	217	212

Table D9
Median Minutes Traveled to Participate by Income

INCOME	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
LT $20,000	20.00	17.50	15.00	20.00	17.50	10.00	15.00	10.00	17.50	17.50	60.00	120.00	25.00	10.00
N	220	27	216	33	30	19	22	20	30	17	32	32	22	23
$20-$30,000	20.00	20.00	15.00	20.00	20.00	10.00	17.50	10.00	25.00	30.00	90.00	120.00	30.00	15.00
N	190	52	332	70	56	36	33	36	14	29	49	75	45	53
$30-$40,000	20.00	20.00	15.00	25.00	20.00	10.00	15.00	10.00	25.00	47.50	120.00	120.00	20.00	10.00
N	161	55	281	56	33	34	36	36	18	17	29	74	41	39
$40-$50,000	30.00	10.00	15.00	45.00	20.00	8.00	15.00	5.00	20.00	45.00	120.00	120.00	52.50	10.00
N	80	33	187	36	11	29	24	16	8	19	18	60	25	28
OVER $50,000	11.50	30.00	15.00	32.50	30.00	5.50	15.00	10.00	60.00	20.00	120.00	120.00	30.00	10.00
N	112	43	210	70	27	76	57	33	10	22	13	96	45	41
DK-REFUSE	20.00	25.00	15.00	47.50	15.00	10.00	15.00	10.00	15.00	37.50	120.00	90.00	30.00	15.00
N	167	33	215	36	27	41	33	24	14	16	14	82	35	32
TOTAL	20.00	20.00	15.00	25.00	20.00	10.00	15.00	10.00	20.00	30.00	120.00	120.00	30.00	10.00
N	930	243	1441	301	184	235	205	165	94	120	155	419	213	216

Table D10
Percent Wanting More Participation by Income

INCOME	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
LT $20,000	1.4%	1.3%	4.0%	2.2%	1.1%	1.3%	1.0%	.8%	.3%	.2%	1.1%	2.9%	1.0%	2.1%
N	630	630	630	630	630	630	630	630	630	630	630	630	630	630
$20-$30,000	1.0%	1.9%	5.0%	3.2%	1.4%	1.3%	1.1%	1.1%	.2%	.8%	1.4%	5.1%	1.4%	2.9%
N	622	622	622	622	622	622	622	622	622	622	622	622	622	622
$30-$40,000	1.6%	2.0%	6.6%	2.9%	1.4%	2.3%	1.2%	1.2%	.2%	1.0%	.6%	5.7%	.8%	1.4%
N	512	512	512	512	512	512	512	512	512	512	512	512	512	512
$40-$50,000	1.0%	2.5%	4.1%	1.3%	1.6%	2.9%	.3%	.6%	.3%	.3%	1.0%	7.6%	1.0%	1.3%
N	314	314	314	314	314	314	314	314	314	314	314	314	314	314
OVER $50,000	1.5%	2.7%	5.1%	5.4%	1.0%	3.9%	2.7%	.7%	0.0	.5%	.7%	3.9%	2.2%	1.0%
N	411	411	411	411	411	411	411	411	411	411	411	411	411	411
DK-REFUSE	1.2%	.8%	2.2%	.8%	0.0	1.0%	1.4%	.6%	.2%	.4%	0.0	3.7%	.8%	1.4%
N	490	490	490	490	490	490	490	490	490	490	490	490	490	490
TOTAL	1.3%	1.8%	4.5%	2.7%	1.1%	1.9%	1.3%	.9%	.2%	.5%	.8%	4.6%	1.2%	1.8%
N	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979

Table D11
Percent Dissatisfied With Opportunities by Income

INCOME	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
LT $20,000	17.5%	38.5%	30.4%	19.0%	30.0%	12.5%	6.3%	33.3%	36.4%	11.1%	29.4%	61.3%	19.0%	26.7%
N	183	13	161	21	20	8	16	9	11	9	17	31	21	15
$20-$30,000	10.3%	0.0	26.2%	18.8%	10.0%	25.0%	18.2%	27.8%	11.1%	20.0%	47.8%	46.3%	22.0%	38.5%
N	146	17	256	32	30	16	22	18	9	10	23	67	41	39
$30-$40,000	19.5%	21.7%	24.0%	38.5%	20.0%	22.2%	13.0%	5.3%	11.1%	37.5%	23.8%	55.9%	20.5%	37.9%
N	118	23	217	26	20	18	23	19	9	8	21	68	39	29
$40-$50,000	17.9%	25.0%	26.8%	30.0%	0.0	13.3%	0.0	0.0	50.0%	12.5%	25.0%	36.5%	23.8%	0.0
N	67	8	149	20	6	15	10	7	4	8	8	63	21	14
OVER $50,000	15.0%	33.3%	21.2%	18.2%	36.4%	21.9%	20.7%	13.3%	28.6%	14.3%	28.6%	50.0%	37.5%	18.2%
N	80	12	151	44	11	32	29	15	7	7	7	92	40	22
DK-REFUSE	10.5%	0.0	23.9%	20.8%	47.1%	18.5%	10.0%	9.1%	33.3%	14.3%	33.3%	42.7%	31.3%	4.0%
N	124	12	176	24	17	27	20	11	6	7	9	75	32	25
TOTAL	14.9%	18.8%	25.4%	23.4%	24.0%	19.8%	13.3%	15.2%	26.1%	18.4%	32.9%	47.7%	26.3%	24.3%
N	718	85	1110	167	104	116	120	79	46	49	85	396	194	144

Table D12
Percent Participating on Weekends by Income

INCOME	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
LT $20,000	30.00	41.50	50.00	50.00	32.50	30.00	50.00	80.00	85.00	94.00	75.00	94.00	80.00	62.50
N	175	13	158	21	19	8	16	9	11	9	17	29	20	15
$20-$30,000	50.00	30.00	50.00	80.00	50.00	50.00	75.00	50.00	67.50	50.00	80.00	80.00	60.00	80.00
N	143	17	254	32	28	15	21	18	9	10	22	67	41	35
$30-$40,000	50.00	50.00	50.00	90.00	75.00	40.00	70.00	30.00	50.00	50.00	90.00	75.00	75.00	65.00
N	115	23	210	26	19	17	22	19	9	7	21	68	38	29
$40-$50,000	50.00	40.00	50.00	80.00	50.00	50.00	50.00	25.00	37.50	90.00	98.00	75.00	82.50	60.00
N	61	8	151	19	6	15	9	7	4	8	7	63	22	15
OVER $50,000	45.00	50.00	50.00	70.00	25.00	40.00	50.00	40.00	98.00	92.50	20.00	80.00	80.00	50.00
N	79	12	153	45	10	32	28	14	7	7	7	90	35	22
DK-REFUSE	45.00	50.00	50.00	75.00	50.00	45.00	40.00	47.50	80.00	82.50	75.00	50.00	50.00	35.00
N	122	11	170	24	17	27	20	11	5	6	9	73	30	25
TOTAL	45.00	50.00	50.00	80.00	50.00	50.00	50.00	50.00	80.00	75.00	80.00	75.00	75.00	50.00
N	695	84	1096	167	99	114	116	78	45	47	83	390	186	141

Table D13
Percent Often Participating by Gender

Gender	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
Male	26.9%	7.4%	44.0%	13.4%	11.7%	7.7%	10.2%	9.1%	2.7%	5.1%	6.1%	18.0%	7.7%	7.0%
N	1319	1319	1319	1319	1319	1319	1319	1319	1319	1319	1319	1319	1319	1319
Female	37.2%	9.9%	53.8%	8.4%	3.1%	8.1%	4.4%	3.6%	3.6%	3.6%	5.1%	11.9%	7.7%	8.0%
N	1660	1660	1660	1660	1660	1660	1660	1660	1660	1660	1660	1660	1660	1660
TOTAL	32.7%	8.8%	49.5%	10.6%	6.9%	7.9%	6.9%	6.0%	3.2%	4.3%	5.6%	14.6%	7.7%	7.6%
N	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979

Table D14
Median Annual Days of Participation by Gender

Gender	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
Male	78.00	30.00	26.00	15.00	15.00	26.00	24.50	26.00	10.00	10.00	6.00	12.00	10.00	10.00
N	336	95	547	169	139	100	134	106	34	65	77	235	96	87
Female	78.00	30.00	30.00	20.00	10.00	22.50	22.00	15.00	15.00	10.00	6.00	10.00	8.00	10.00
N	597	161	848	136	45	124	70	57	57	59	82	193	121	125
TOTAL	78.00	30.00	30.00	15.00	15.00	25.00	24.00	24.00	12.00	10.00	6.00	10.00	8.00	10.00
N	933	256	1395	305	184	224	204	163	91	124	159	428	217	212

Table D15
Median Minutes Traveled to Participate by Gender

Gender	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
Male	20.00	20.00	15.00	20.00	20.00	10.00	15.00	10.00	20.00	25.00	120.00	120.00	42.50	10.00
N	336	92	563	168	139	101	133	107	34	64	76	229	95	87
Female	20.00	20.00	15.00	30.00	20.00	5.00	15.00	5.00	20.00	30.00	90.00	120.00	15.00	10.00
N	594	151	878	133	45	134	72	58	60	56	79	190	118	129
TOTAL	20.00	20.00	15.00	25.00	20.00	10.00	15.00	10.00	20.00	30.00	120.00	120.00	30.00	10.00
N	930	243	1441	301	184	235	205	165	94	120	155	419	213	216

Table D16
Percent Wanting More Participation by Gender

Gender	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
Male	.9%	1.1%	3.5%	3.8%	2.1%	1.7%	1.8%	1.1%	.2%	.7%	.9%	5.2%	.8%	1.3%
N	1319	1319	1319	1319	1319	1319	1319	1319	1319	1319	1319	1319	1319	1319
Female	1.6%	2.3%	5.4%	1.7%	.2%	2.2%	.8%	.7%	.2%	.4%	.8%	4.1%	1.4%	2.2%
N	1660	1660	1660	1660	1660	1660	1660	1660	1660	1660	1660	1660	1660	1660
TOTAL	1.3%	1.8%	4.5%	2.7%	1.1%	1.9%	1.3%	.9%	.2%	.5%	.8%	4.6%	1.2%	1.8%
N	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979

Table D17
Percent Dissatisfied With Opportunities by Gender

Gender	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
Male	11.6%	19.4%	23.6%	22.5%	24.1%	23.2%	12.2%	16.1%	25.0%	8.3%	27.9%	46.8%	24.7%	18.0%
N	275	36	423	89	83	56	82	62	20	24	43	220	81	61
Female	16.9%	18.4%	26.5%	24.4%	23.8%	16.7%	15.8%	11.8%	26.9%	28.0%	38.1%	48.9%	27.4%	28.9%
N	443	49	687	78	21	60	38	17	26	25	42	178	113	83
TOTAL	14.9%	18.8%	25.4%	23.4%	24.0%	19.8%	13.3%	15.2%	26.1%	18.4%	32.9%	47.7%	26.3%	24.3%
N	718	85	1110	167	104	116	120	79	46	49	85	398	194	144

Table D18
Percent Participating on Weekends by Gender

Gender	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
Male	50.00	50.00	50.00	70.00	50.00	50.00	50.00	50.00	50.00	90.00	80.00	75.00	75.00	50.00
N	264	36	419	88	80	54	80	61	20	23	42	216	77	59
Female	45.00	50.00	50.00	90.00	50.00	40.00	50.00	60.00	98.00	50.00	80.00	80.00	75.00	50.00
N	431	48	677	79	19	60	36	17	26	24	41	174	109	82
TOTAL	45.00	50.00	50.00	80.00	50.00	50.00	50.00	50.00	80.00	75.00	80.00	75.00	75.00	50.00
N	695	84	1096	167	99	114	116	78	46	47	83	390	186	141

Table D19
Percent Often Participating by Children at Home

Kids at Home?	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
No	37.4%	8.0%	40.7%	10.4%	6.6%	7.6%	8.4%	4.1%	2.9%	3.5%	4.2%	13.0%	7.4%	3.9%
N	1773	1773	1773	1773	1773	1773	1773	1773	1773	1773	1773	1773	1773	1773
Yes	25.7%	10.0%	62.4%	10.9%	7.4%	8.4%	4.8%	8.8%	3.7%	5.4%	7.6%	16.9%	8.0%	12.9%
N	1206	1206	1206	1206	1206	1206	1206	1206	1206	1206	1206	1206	1206	1206
TOTAL	32.7%	8.8%	49.5%	10.6%	6.9%	7.9%	6.9%	6.0%	3.2%	4.3%	5.6%	14.6%	7.7%	7.6%
N	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979

Table D20
Median Annual Days of Participation
By Children at Home

Kids at Home?	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
No	78.00	30.00	26.00	15.00	15.00	25.00	25.00	26.00	10.00	10.00	6.00	10.00	8.00	10.00
N	637	141	688	179	106	132	146	65	46	61	71	227	129	68
Yes	78.00	30.00	30.00	18.00	15.00	25.00	20.00	24.00	12.00	10.00	6.00	10.00	8.50	10.00
N	296	115	707	126	78	92	58	98	45	63	88	201	88	144
TOTAL	78.00	30.00	30.00	15.00	15.00	25.00	24.00	24.00	12.00	10.00	6.00	10.00	8.00	10.00
N	933	256	1395	305	184	224	204	163	91	124	159	428	217	212

Table D21
Median Minutes Traveled to Participate
By Children at Home

Kids at Home?	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
No	20.00	20.00	15.00	20.00	20.00	10.00	15.00	10.00	15.00	20.00	120.00	120.00	20.00	15.00
N	636	135	703	174	107	134	147	65	50	61	70	221	125	68
Yes	20.00	20.00	15.00	30.00	20.00	5.00	15.00	10.00	20.00	30.00	90.00	90.00	30.00	10.00
N	294	108	738	127	77	101	58	100	44	59	85	198	88	148
TOTAL	20.00	20.00	15.00	25.00	20.00	10.00	15.00	10.00	20.00	30.00	120.00	120.00	30.00	10.00
N	930	243	1441	301	184	235	205	165	94	120	155	419	213	216

Table D22
Percent Wanting More Participation
By Children at Home

Kids at Home?	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
No	1.3%	1.9%	3.9%	2.3%	.9%	1.5%	1.4%	.7%	.1%	.5%	.7%	3.4%	1.1%	1.2%
N	1773	1773	1773	1773	1773	1773	1773	1773	1773	1773	1773	1773	1773	1773
Yes	1.2%	1.6%	5.5%	3.2%	1.3%	2.6%	1.1%	1.1%	.4%	.7%	1.1%	6.3%	1.3%	2.7%
N	1206	1206	1206	1206	1206	1206	1206	1206	1206	1206	1206	1206	1206	1206
TOTAL	1.3%	1.8%	4.5%	2.7%	1.1%	1.9%	1.3%	.9%	.2%	.5%	.8%	4.6%	1.2%	1.8%
N	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979

Table D23
Percent Dissatisfied With Opportunities
By Children at Home

Kids at Home?	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
No	15.9%	16.1%	26.7%	21.8%	17.7%	24.7%	11.4%	20.0%	26.1%	13.8%	34.8%	52.4%	30.2%	25.0%
N	509	56	514	101	62	73	88	35	23	29	46	208	116	48
Yes	12.4%	24.1%	24.3%	25.8%	33.3%	11.6%	18.8%	11.4%	26.1%	25.0%	30.8%	42.6%	20.5%	24.0%
N	209	29	596	66	42	43	32	44	23	20	39	188	78	96
TOTAL	14.9%	18.8%	25.4%	23.4%	24.0%	19.8%	13.3%	15.2%	26.1%	18.4%	32.9%	47.7%	26.3%	24.3%
N	718	85	1110	167	104	116	120	79	46	49	85	396	194	144

Table D24
Percent Participating on Weekends
By Children at Home

Kids at Home?	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
No	46.50	50.00	50.00	75.00	50.00	50.00	50.00	50.00	50.00	50.00	77.50	75.00	60.00	50.00
N	491	56	504	102	60	70	84	35	22	28	45	205	113	49
Yes	45.00	50.00	50.00	80.00	50.00	40.00	50.00	40.00	80.00	92.50	80.00	75.00	80.00	50.00
N	204	28	592	65	39	44	32	43	23	19	38	185	73	92
TOTAL	45.00	50.00	50.00	80.00	50.00	50.00	50.00	50.00	80.00	75.00	80.00	75.00	75.00	50.00
N	695	84	1096	167	99	114	116	78	45	47	83	390	186	141

Table D25
Percent Often Participating by Region

REGION	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
Cape Cod	33.4%	14.1%	54.8%	12.9%	11.1%	9.9%	9.2%	3.2%	3.5%	1.6%	2.8%	11.3%	8.8%	4.1%
N	434	434	434	434	434	434	434	434	434	434	434	434	434	434
Southeast	32.2%	7.3%	52.7%	9.6%	3.8%	7.9%	5.2%	5.4%	2.3%	1.9%	6.5%	13.0%	3.8%	7.7%
N	478	478	478	478	478	478	478	478	478	478	478	478	478	478
Metro Boston	37.6%	8.6%	46.4%	10.8%	3.9%	11.0%	7.4%	6.8%	3.6%	5.2%	3.4%	17.9%	8.3%	7.8%
N	591	591	591	591	591	591	591	591	591	591	591	591	591	591
Northeast	28.5%	8.1%	49.0%	14.8%	9.5%	7.0%	7.0%	7.9%	.9%	5.6%	5.8%	19.3%	9.7%	9.7%
N	431	431	431	431	431	431	431	431	431	431	431	431	431	431
Central	25.9%	8.9%	50.5%	7.2%	6.2%	4.9%	7.9%	8.5%	3.0%	3.6%	7.5%	12.1%	4.9%	7.9%
N	305	305	305	305	305	305	305	305	305	305	305	305	305	305
Conn Valley	27.1%	8.4%	47.1%	10.0%	8.6%	5.6%	7.2%	6.8%	6.0%	6.8%	10.0%	11.6%	9.8%	8.0%
N	501	501	501	501	501	501	501	501	501	501	501	501	501	501
Berkshire	47.7%	4.6%	45.6%	6.3%	5.9%	6.7%	3.3%	2.1%	2.5%	4.6%	2.1%	16.7%	7.1%	7.5%
N	239	239	239	239	239	239	239	239	239	239	239	239	239	239
TOTAL	32.7%	8.8%	49.5%	10.6%	6.9%	7.9%	6.9%	6.0%	3.2%	4.3%	5.6%	14.6%	7.7%	7.6%
N	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979

Table D26
Median Annual Days of Participation by Region

REGION	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
Cape Cod	85.00	50.00	50.00	22.50	20.00	24.50	20.00	24.00	20.50	6.00	4.00	7.00	6.50	12.00
N	142	57	227	54	47	40	38	13	14	7	11	48	37	17
Southeast	78.00	25.50	28.00	15.00	11.00	20.00	25.00	28.00	10.00	6.00	10.00	10.00	7.00	12.00
N	147	34	246	45	14	35	25	22	11	9	29	61	16	32
Metro Boston	78.00	37.50	25.00	14.00	15.00	25.00	24.00	28.00	9.00	10.00	5.00	10.00	8.50	10.00
N	207	51	254	58	18	64	43	34	20	30	18	104	48	42
Northeast	52.00	25.00	22.00	15.00	15.00	30.00	20.00	22.00	15.00	12.00	6.00	10.00	6.00	6.00
N	123	35	200	63	38	29	30	32	4	24	25	83	41	41
Central	52.00	25.00	30.00	20.00	12.00	12.00	30.00	20.00	5.00	7.00	6.00	10.00	5.00	5.50
N	76	27	148	21	17	15	24	26	9	11	23	37	15	24
Conn Valley	100.00	40.00	26.00	15.00	15.00	26.00	22.50	25.00	10.00	12.00	6.00	10.00	10.00	10.00
N	132	42	221	49	38	27	36	31	28	32	48	56	45	39
Berkshire	100.00	45.00	60.00	12.00	20.00	28.00	16.00	35.00	12.00	20.00	4.00	15.00	10.00	15.00
N	106	10	99	15	12	14	8	5	5	11	5	39	15	17
TOTAL	78.00	30.00	30.00	15.00	15.00	25.00	24.00	24.00	12.00	10.00	6.00	10.00	8.00	10.00
N	933	256	1395	305	184	224	204	163	91	124	159	428	217	212

Table D27
Median Minutes Traveled to Participate by Region

REGION	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
Cape Cod	25.00	15.00	6.00	10.00	15.00	9.00	10.00	10.00	12.00	90.00	180.00	180.00	20.00	10.00
N	138	56	234	52	46	43	40	14	14	7	10	45	36	18
Southeast	15.00	10.00	22.50	42.50	45.00	10.00	15.00	5.00	25.00	135.00	60.00	150.00	70.00	10.00
N	142	30	247	45	15	38	25	22	10	8	30	61	17	34
Metro Boston	20.00	22.50	20.00	45.00	30.00	10.00	15.00	10.00	15.00	30.00	120.00	120.00	30.00	10.00
N	215	47	269	59	19	65	43	36	21	30	19	105	44	44
Northeast	17.50	45.00	15.00	22.50	20.00	10.00	20.00	10.00	60.00	60.00	120.00	120.00	30.00	15.00
N	117	33	198	59	35	30	29	30	4	21	24	75	37	40
Central	15.00	30.00	30.00	57.50	20.00	5.00	17.50	5.00	57.50	120.00	105.00	45.00	20.00	10.00
N	77	24	152	22	17	15	24	26	9	9	21	37	15	24
Conn Valley	30.00	20.00	15.00	20.00	17.50	10.00	15.00	12.50	20.00	15.00	85.00	60.00	20.00	10.00
N	132	42	233	49	40	28	36	32	30	34	47	56	47	40
Berkshire	20.00	.	15.00	45.00	20.00	15.00	15.00	15.00	20.00	17.50	195.00	60.00	20.00	15.00
N	109	11	108	15	12	16	8	5	6	11	4	40	17	16
TOTAL	20.00	20.00	15.00	25.00	20.00	10.00	15.00	10.00	20.00	30.00	120.00	120.00	30.00	10.00
N	930	243	1441	301	184	235	205	165	94	120	155	419	213	216

Table D28
Percent Wanting More Participation by Region

REGION	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
Cape Cod	1.4%	2.1%	4.8%	3.5%	1.2%	2.3%	1.6%	.2%	.2%	.5%	.7%	5.5%	1.2%	3.5%
N	434	434	434	434	434	434	434	434	434	434	434	434	434	434
Southeast	1.3%	1.5%	2.5%	1.0%	1.0%	1.3%	.4%	.8%	.2%	.6%	.6%	4.2%	.4%	1.0%
N	478	478	478	478	478	478	478	478	478	478	478	478	478	478
Metro Boston	.8%	1.9%	5.1%	3.7%	.3%	3.0%	1.7%	.7%	.2%	.5%	1.0%	4.6%	.8%	.7%
N	591	591	591	591	591	591	591	591	591	591	591	591	591	591
Northeast	2.3%	2.6%	5.3%	3.5%	1.6%	3.0%	2.6%	.9%	.5%	.5%	.5%	3.9%	2.6%	2.6%
N	431	431	431	431	431	431	431	431	431	431	431	431	431	431
Central	2.3%	3.0%	5.9%	2.6%	2.0%	1.3%	.3%	1.6%	0.0	.3%	.7%	6.2%	2.3%	3.3%
N	305	305	305	305	305	305	305	305	305	305	305	305	305	305
Conn Valley	.6%	1.0%	4.6%	2.0%	1.0%	1.0%	.8%	.8%	0.0	1.0%	1.6%	4.8%	.8%	1.0%
N	501	501	501	501	501	501	501	501	501	501	501	501	501	501
Berkshire	.4%	.4%	3.3%	1.7%	.8%	.8%	1.3%	1.7%	.4%	0.0	.4%	2.5%	.4%	1.3%
N	239	239	239	239	239	239	239	239	239	239	239	239	239	239
TOTAL	1.3%	1.8%	4.5%	2.7%	1.1%	1.9%	1.3%	.9%	.2%	.5%	.8%	4.6%	1.2%	1.8%
N	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979

Table D29
Percent Dissatisfied With Opportunities by Region

REGION	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
Cape Cod	12.9%	11.8%	14.5%	2.9%	14.8%	31.3%	10.7%	0.0	25.0%	0.0	50.0%	67.4%	38.2%	16.7%
N	101	17	179	34	27	16	28	4	4	4	8	43	34	12
Southeast	9.8%	27.3%	20.3%	17.2%	25.0%	11.1%	7.7%	14.3%	28.8%	0.0	28.7%	67.2%	40.0%	12.5%
N	112	11	197	29	8	18	13	14	7	4	15	58	15	24
Metro Boston	13.1%	15.8%	29.4%	22.6%	18.2%	22.2%	17.4%	20.0%	25.0%	25.0%	30.0%	50.5%	27.3%	10.3%
N	168	19	187	31	11	36	23	20	12	8	10	97	44	29
Northeast	28.7%	23.1%	35.5%	44.7%	37.5%	18.8%	12.5%	46.2%	50.0%	45.5%	33.3%	49.4%	37.5%	36.7%
N	87	13	166	38	24	16	16	13	2	11	9	77	32	30
Central	22.2%	0.0	30.0%	16.7%	40.0%	14.3%	26.7%	0.0	28.6%	25.0%	40.0%	23.5%	44.4%	28.6%
N	63	5	120	12	5	7	15	13	7	4	10	34	9	14
Conn Valley	16.5%	29.4%	32.4%	33.3%	15.0%	25.0%	9.1%	0.0	23.1%	8.3%	30.0%	34.0%	6.7%	60.0%
N	97	17	179	18	20	12	22	11	13	12	30	50	45	20
Berkshire	6.7%	0.0	9.8%	20.0%	33.3%	9.1%	0.0	0.0	0.0	0.0	33.3%	24.3%	6.7%	0.0
N	90	3	82	5	9	11	3	4	1	6	3	37	15	15
TOTAL	14.9%	18.8%	25.4%	23.4%	24.0%	19.8%	13.3%	15.2%	26.1%	18.4%	32.9%	47.7%	26.3%	24.3%
N	718	85	1110	167	104	116	120	79	46	49	85	396	194	144

Table D30
Percent Participating on Weekends by Region

REGION	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
Cape Cod	50.00	30.00	50.00	80.00	50.00	50.00	50.00	98.00	50.00	40.00	98.00	75.00	60.00	50.00
N	98	17	174	34	24	16	26	3	4	4	8	41	34	12
Southeast	50.00	50.00	50.00	80.00	47.50	40.00	50.00	32.50	50.00	79.00	80.00	80.00	73.50	32.50
N	111	10	200	28	8	17	13	14	7	4	15	57	14	24
Metro Boston	35.00	50.00	50.00	70.00	80.00	50.00	50.00	70.00	90.00	94.00	85.00	80.00	80.00	90.00
N	169	19	190	32	10	36	23	20	12	8	10	99	44	30
Northeast	31.50	50.00	50.00	77.50	75.00	40.00	70.00	50.00	86.50	90.00	50.00	75.00	90.00	77.50
N	80	13	163	38	23	16	14	13	2	10	8	76	30	29
Central	25.00	40.00	50.00	75.00	75.00	25.00	50.00	50.00	80.00	74.00	98.00	80.00	95.00	50.00
N	58	5	116	12	5	6	15	13	7	4	9	31	9	13
Conn Valley	40.00	40.00	50.00	77.50	20.00	50.00	75.00	25.00	98.00	75.00	80.00	80.00	50.00	65.00
N	91	17	173	18	20	12	22	11	13	11	30	49	40	19
Berkshire	50.00	50.00	50.00	50.00	50.00	40.00	50.00	37.50	.	50.00	47.50	45.00	50.00	42.50
N	88	3	80	5	9	11	3	4	0	6	3	37	15	14
TOTAL	45.00	50.00	50.00	80.00	50.00	50.00	50.00	50.00	80.00	75.00	80.00	75.00	75.00	50.00
N	695	84	1096	167	99	114	116	78	45	47	83	390	186	141

Table D31
Percent Often Participating by Age

AGEGROUP	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
18-24	27.4%	11.4%	56.6%	10.9%	4.3%	9.7%	6.3%	18.6%	2.6%	3.1%	4.0%	31.1%	7.1%	14.6%
N	350	350	350	350	350	350	350	350	350	350	350	350	350	350
25-34	24.0%	13.5%	58.1%	11.8%	9.7%	7.3%	5.9%	10.0%	3.5%	5.5%	8.3%	21.2%	8.0%	11.1%
N	659	659	659	659	659	659	659	659	659	659	659	659	659	659
35-49	31.1%	10.5%	58.8%	13.2%	8.3%	11.2%	5.3%	3.8%	3.6%	6.3%	6.8%	15.5%	10.4%	10.5%
N	809	809	809	809	809	809	809	809	809	809	809	809	809	809
50+	41.3%	4.0%	34.1%	7.6%	5.4%	5.2%	9.1%	1.2%	3.0%	2.5%	3.4%	4.4%	5.6%	1.0%
N	1051	1051	1051	1051	1051	1051	1051	1051	1051	1051	1051	1051	1051	1051
.	30.0%	5.5%	53.6%	12.7%	2.7%	6.4%	6.4%	3.6%	2.7%	2.7%	5.5%	13.6%	6.4%	4.5%
N	110	110	110	110	110	110	110	110	110	110	110	110	110	110
TOTAL	32.7%	8.8%	49.5%	10.6%	6.9%	7.9%	6.9%	6.0%	3.2%	4.3%	5.6%	14.6%	7.7%	7.6%
N	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979

Table D32
Median Annual Days of Participation by Age

AGEGROUP	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
18-24	63.50	40.00	30.00	12.00	6.00	20.00	13.50	25.00	25.00	5.50	8.00	10.00	10.00	9.00
N	88	40	189	36	15	33	22	60	9	10	14	108	24	46
25-34	78.00	30.00	26.00	15.00	15.00	23.00	20.00	24.00	8.00	9.00	5.00	10.00	6.00	10.00
N	153	88	372	77	53	45	39	59	22	36	54	137	50	72
35-49	78.00	30.00	30.00	20.00	15.00	25.50	20.00	20.00	18.00	10.00	9.00	10.00	6.50	10.00
N	245	81	441	101	61	88	43	29	28	50	51	122	79	80
50+	100.00	30.00	30.00	15.00	20.00	30.00	30.00	40.00	10.00	20.00	10.00	10.00	8.00	9.00
N	416	42	336	80	53	52	93	11	29	25	34	46	58	10
.	78.00	16.00	26.00	15.00	27.50	18.00	30.00	36.00	12.00	5.00	2.50	8.00	12.50	17.00
N	31	5	57	11	2	6	7	4	3	3	6	15	6	4
TOTAL	78.00	30.00	30.00	15.00	15.00	25.00	24.00	24.00	12.00	10.00	6.00	10.00	8.00	10.00
N	933	256	1395	305	184	224	204	163	91	124	159	428	217	212

Table D33
Median Minutes Traveled to Participate by Age

AGEGROUP	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
18-24	20.00	15.00	15.00	30.00	20.00	10.00	15.00	10.00	15.00	60.00	60.00	120.00	17.50	15.00
N	90	39	192	38	15	34	22	60	9	10	14	106	25	46
25-34	20.00	20.00	15.00	30.00	20.00	10.00	15.00	10.00	15.00	45.00	120.00	120.00	30.00	12.50
N	148	82	379	76	52	48	38	59	21	33	53	135	46	70
35-49	20.00	15.00	15.00	20.00	17.50	6.50	15.00	10.00	17.50	15.00	120.00	90.00	30.00	10.00
N	245	79	465	103	61	91	42	30	29	48	48	120	80	84
50+	20.00	25.00	15.00	20.00	20.00	10.00	15.00	20.00	20.00	47.50	90.00	120.00	30.00	5.00
N	414	38	348	71	53	55	96	12	32	26	34	43	55	11
.	25.00	15.00	25.00	55.00	15.00	7.50	15.00	5.00	22.50	60.00	105.00	75.00	15.00	10.00
N	33	5	57	13	3	7	7	4	3	3	6	15	7	5
TOTAL	20.00	20.00	15.00	25.00	20.00	10.00	15.00	10.00	20.00	30.00	120.00	120.00	30.00	10.00
N	930	243	1441	301	184	235	205	165	94	120	155	419	213	216

Table D34
Percent Wanting More Participation by Age

AGEGROUP	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
18-24	.9%	.9%	3.7%	5.4%	.6%	2.3%	.9%	3.4%	0.0	.9%	.9%	8.3%	.6%	2.3%
N	350	350	350	350	350	350	350	350	350	350	350	350	350	350
25-34	1.4%	2.4%	6.5%	3.0%	1.8%	3.0%	1.7%	.8%	.3%	.3%	1.5%	8.3%	1.2%	2.9%
N	659	659	659	659	659	659	659	659	659	659	659	659	659	659
35-49	.9%	2.6%	6.3%	3.3%	1.0%	2.2%	.7%	.6%	.2%	.6%	.5%	4.4%	2.0%	2.0%
N	809	809	809	809	809	809	809	809	809	809	809	809	809	809
50+	1.6%	1.1%	2.5%	.9%	.9%	1.0%	1.4%	.4%	.2%	.6%	.7%	1.2%	.7%	.9%
N	1051	1051	1051	1051	1051	1051	1051	1051	1051	1051	1051	1051	1051	1051
.	1.8%	.9%	1.8%	3.6%	.9%	.9%	2.7%	0.0	0.0	0.0	.9%	3.6%	1.8%	.9%
N	110	110	110	110	110	110	110	110	110	110	110	110	110	110
TOTAL	1.3%	1.8%	4.5%	2.7%	1.1%	1.9%	1.3%	.9%	.2%	.5%	.8%	4.6%	1.2%	1.8%
N	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979

Table D35
Percent Dissatisfied With Opportunities by Age

AGEGROUP	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
18-24	9.8%	25.0%	19.0%	16.7%	28.6%	6.7%	14.3%	14.8%	33.3%	50.0%	25.0%	46.5%	16.7%	32.3%
N	61	16	153	18	7	15	7	27	6	6	4	101	24	31
25-34	21.4%	13.2%	28.0%	26.8%	17.9%	28.6%	10.5%	14.8%	50.0%	14.3%	33.3%	48.8%	18.2%	12.8%
N	112	38	282	41	28	28	19	27	8	14	24	127	44	47
35-49	10.9%	31.8%	25.5%	18.5%	25.0%	23.3%	18.2%	21.4%	18.8%	11.8%	31.8%	48.2%	23.9%	29.6%
N	175	22	365	54	36	43	22	14	16	17	22	112	71	54
50+	15.9%	0.0	25.5%	28.9%	28.1%	13.8%	11.8%	11.1%	18.8%	16.7%	36.7%	43.9%	37.5%	14.3%
N	347	9	259	45	32	29	68	9	16	12	30	41	48	7
.	13.0%	.	29.4%	22.2%	0.0	0.0	25.0%	0.0	.	.	20.0%	53.3%	57.1%	40.0%
N	23	0	51	9	1	1	4	2	0	0	5	15	7	5
TOTAL	14.9%	18.8%	25.4%	23.4%	24.0%	19.8%	13.3%	15.2%	26.1%	18.4%	32.9%	47.7%	26.3%	24.3%
N	718	85	1110	167	104	116	120	79	46	49	85	396	194	144

Table D36
Percent Participating on Weekends by Age

AGEGROUP	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
18-24	50.00	50.00	50.00	80.00	65.00	50.00	75.00	50.00	89.00	70.00	98.00	75.00	75.00	50.00
N	60	16	149	18	7	13	6	26	6	6	4	100	23	31
25-34	42.50	50.00	50.00	75.00	80.00	42.50	40.00	35.00	22.50	90.00	90.00	80.00	96.50	50.00
N	110	38	280	40	26	28	18	27	8	14	24	127	43	46
35-49	45.00	31.50	50.00	80.00	50.00	40.00	60.00	35.00	85.00	90.00	80.00	75.00	63.50	50.00
N	171	22	361	55	34	44	23	14	16	15	20	111	68	51
50+	45.00	29.00	50.00	50.00	40.00	50.00	50.00	80.00	85.00	15.00	50.00	62.50	50.00	25.00
N	331	8	257	45	31	28	65	9	15	12	30	39	46	8
.	50.00	.	50.00	80.00	15.00	98.00	80.00	35.00	.	.	80.00	94.00	50.00	50.00
N	23	0	49	9	1	1	4	2	0	0	5	13	6	5
TOTAL	45.00	50.00	50.00	80.00	50.00	50.00	50.00	50.00	80.00	75.00	80.00	75.00	75.00	50.00
N	695	84	1096	167	99	114	116	78	45	47	83	390	186	141

Table D37
Percent Often Participating by Education

EDGROUP	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
LT HS	31.6%	1.6%	31.6%	3.2%	10.7%	2.4%	3.2%	8.7%	5.1%	2.0%	6.3%	4.0%	.8%	4.0%
N	253	253	253	253	253	253	253	253	253	253	253	253	253	253
HS	31.3%	5.4%	48.1%	7.7%	6.0%	3.9%	4.8%	6.7%	4.0%	2.5%	6.5%	10.0%	3.8%	6.6%
N	1115	1115	1115	1115	1115	1115	1115	1115	1115	1115	1115	1115	1115	1115
HS+	30.9%	11.8%	56.5%	10.8%	8.0%	8.4%	8.2%	6.1%	2.7%	4.1%	5.5%	14.8%	9.4%	8.5%
N	586	586	586	586	586	586	586	586	586	586	586	586	586	586
BS	35.3%	12.6%	61.8%	15.6%	7.1%	13.4%	8.6%	5.2%	1.5%	4.5%	4.1%	21.8%	11.5%	9.8%
N	733	733	733	733	733	733	733	733	733	733	733	733	733	733
GRAD	35.6%	12.7%	50.3%	15.8%	4.5%	13.0%	12.0%	2.7%	3.8%	12.7%	5.1%	22.9%	15.4%	6.5%
N	292	292	292	292	292	292	292	292	292	292	292	292	292	292
TOTAL	32.7%	8.8%	49.5%	10.6%	6.9%	7.9%	6.9%	6.0%	3.2%	4.3%	5.6%	14.6%	7.7%	7.6%
N	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979

Table D38
Median Annual Days of Participation by Education

EDGROUP	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
LT HS	78.00	20.00	25.00	10.00	20.00	56.00	30.00	20.00	5.00	12.00	10.00	5.50	12.50	9.00
N	78	3	73	8	25	4	8	21	13	4	15	10	2	8
HS	100.00	30.00	26.00	15.00	15.00	25.00	20.00	24.00	10.00	12.00	8.00	10.00	7.00	10.00
N	328	60	504	82	61	41	52	66	41	28	70	110	38	70
HS+	57.00	30.00	30.00	15.00	12.00	20.00	20.00	17.50	28.00	6.00	10.00	10.00	9.00	10.00
N	177	66	316	63	43	47	48	36	16	23	31	86	55	47
BS	78.00	30.00	40.00	17.50	15.00	26.00	25.00	30.00	20.00	10.00	5.50	12.00	8.00	10.00
N	250	91	362	108	46	94	62	33	11	32	28	158	79	70
GRAD	78.00	30.00	26.00	12.00	6.00	28.00	25.00	20.00	11.00	10.00	3.00	10.00	8.50	10.00
N	100	36	140	44	9	38	34	7	10	37	15	64	43	17
TOTAL	78.00	30.00	30.00	15.00	15.00	25.00	24.00	24.00	12.00	10.00	6.00	10.00	8.00	10.00
N	933	256	1395	305	184	224	204	163	91	124	159	428	217	212

Table D39
Median Minutes Traveled to Participate by Education

EDGROUP	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
LT HS	20.00	10.00	17.50	20.00	30.00	10.00	20.00	10.00	17.50	20.00	67.50	75.00	5.00	10.00
N	78	3	78	8	25	6	8	22	13	5	16	10	2	8
HS	20.00	15.00	15.00	20.00	20.00	10.00	15.00	10.00	20.00	40.00	105.00	90.00	20.00	15.00
N	337	57	521	81	58	44	52	67	44	28	69	109	39	71
HS+	20.00	20.00	15.00	20.00	20.00	10.00	15.00	5.00	20.00	30.00	90.00	120.00	30.00	10.00
N	172	62	325	61	43	49	48	36	16	22	30	84	52	49
BS	20.00	20.00	15.00	27.50	20.00	10.00	15.00	10.00	25.00	30.00	120.00	120.00	30.00	10.00
N	245	86	373	108	47	98	62	33	11	29	26	155	77	70
GRAD	15.00	30.00	12.50	27.50	20.00	10.00	15.00	10.00	15.00	15.00	120.00	120.00	20.00	10.00
N	98	35	144	43	11	38	35	7	10	36	14	61	43	18
TOTAL	20.00	20.00	15.00	25.00	20.00	10.00	15.00	10.00	20.00	30.00	120.00	120.00	30.00	10.00
N	930	243	1441	301	184	235	205	165	94	120	155	419	213	216

Table D40
Percent Wanting More Participation by Education

EDGROUP	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
LT HS	.8%	.4%	2.4%	.8%	2.4%	.8%	1.2%	1.2%	0.0	0.0	.4%	3.6%	.8%	1.6%
N	253	253	253	253	253	253	253	253	253	253	253	253	253	253
HS	1.8%	1.2%	3.4%	2.0%	.7%	1.5%	.8%	.9%	.3%	.4%	1.1%	3.9%	.5%	1.6%
N	1115	1115	1115	1115	1115	1115	1115	1115	1115	1115	1115	1115	1115	1115
HS+	1.0%	2.6%	6.1%	3.6%	1.4%	2.0%	1.4%	.9%	.2%	.2%	.9%	7.2%	1.7%	2.6%
N	586	586	586	586	586	586	586	586	586	586	586	586	586	586
BS	.4%	2.3%	4.1%	2.0%	1.1%	1.9%	1.4%	1.0%	.1%	.7%	.7%	4.5%	1.9%	1.9%
N	733	733	733	733	733	733	733	733	733	733	733	733	733	733
GRAD	2.4%	2.4%	8.6%	6.5%	.7%	4.5%	2.7%	.3%	.3%	2.1%	.7%	3.1%	1.0%	.7%
N	292	292	292	292	292	292	292	292	292	292	292	292	292	292
TOTAL	1.3%	1.8%	4.5%	2.7%	1.1%	1.9%	1.3%	.9%	.2%	.5%	.8%	4.6%	1.2%	1.8%
N	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979	2979

Table D41
Percent Dissatisfied With Opportunities by Education

EDGROUP	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
LT HS	18.6%	0.0	20.0%	0.0	6.3%	0.0	40.0%	25.0%	40.0%	0.0	12.5%	50.0%	0.0	75.0%
N	59	1	60	3	16	2	5	12	5	1	8	10	1	4
HS	11.9%	12.5%	28.4%	15.2%	26.5%	19.2%	10.0%	8.1%	22.2%	20.0%	40.5%	40.6%	18.4%	25.9%
N	269	24	415	46	34	26	30	37	18	10	42	106	38	54
HS+	15.7%	26.7%	28.1%	29.4%	43.5%	15.0%	13.3%	10.0%	11.1%	41.7%	20.0%	46.8%	31.4%	21.6%
N	127	15	249	34	23	20	30	10	9	12	15	79	51	37
BS	14.3%	21.6%	19.0%	27.0%	8.0%	21.6%	15.8%	18.8%	50.0%	0.0	35.7%	47.5%	29.2%	11.6%
N	182	37	284	63	25	51	38	16	6	11	14	141	65	43
GRAD	22.2%	12.5%	27.5%	23.8%	50.0%	23.5%	5.9%	50.0%	25.0%	13.3%	33.3%	61.7%	23.1%	83.3%
N	81	8	102	21	6	17	17	4	8	15	6	60	39	6
TOTAL	14.9%	18.8%	25.4%	23.4%	24.0%	19.8%	13.3%	15.2%	26.1%	18.4%	32.9%	47.7%	26.3%	24.3%
N	718	85	1110	167	104	116	120	79	46	49	85	396	194	144

Table D42
Percent Participating on Weekends by Education

EDGROUP	Walk Jog Run	Bike	Swim	Boat	Fish	Tennis	Golf	Field Sports	Picnic	Hike	Camp	DHSki	XCSki	Skate
LT HS	50.00	50.00	50.00	50.00	40.00	65.00	65.00	50.00	61.50	98.00	65.00	80.00	50.00	50.00
N	56	1	58	2	16	2	5	12	5	1	8	10	1	4
HS	50.00	40.00	50.00	80.00	50.00	37.50	62.50	50.00	82.50	65.00	80.00	80.00	75.00	75.00
N	268	23	410	46	33	24	30	37	18	10	40	105	34	51
HS+	45.00	50.00	50.00	80.00	75.00	50.00	50.00	50.00	98.00	55.00	94.00	80.00	90.00	80.00
N	124	15	243	34	20	20	27	9	9	11	15	79	51	38
BS	40.00	50.00	50.00	70.00	50.00	40.00	50.00	30.00	35.00	82.50	80.00	50.00	50.00	37.50
N	172	37	283	64	24	51	38	16	6	11	14	139	65	42
GRAD	50.00	50.00	50.00	90.00	10.00	50.00	20.00	50.00	50.00	82.50	75.00	80.00	50.00	25.00
N	75	8	102	21	6	17	16	4	7	14	6	57	35	6
TOTAL	45.00	50.00	50.00	80.00	50.00	50.00	50.00	50.00	80.00	75.00	80.00	75.00	75.00	50.00
N	695	84	1096	167	99	114	116	78	45	47	83	390	186	141

Outdoor Recreation Demand Questionnaire

Massachusetts Recreation Survey of 1987

Atlantic Marketing Research Company
109 State Street
Boston, Massachusetts 02109

QUESTIONNAIRE # ______ TELEPHONE # ______________

INTERVIEWER ID # ______ COUNTY______________

Hello, I'm calling from the Atlantic Research Company in Boston. The State of Massachusetts has asked us to survey **OUTDOOR RECREATION NEEDS** and the interview will take only a few minutes. May I speak with the person in your house with the **NEXT BIRTHDAY who is 18 YEARS or OLDER?**

1. **THINKING ABOUT THE WARM WEATHER MONTHS,** what **OUTDOOR RECREATION ACTIVITY** do you do most often during the **WARM WEATHER?** This would include anything you do for relaxation or pleasure out-of-doors.
   (IF NONE, GO TO 23)
2. In the last year, how many times did you (activity) for recreation?
3. Where did you usually (activity)?
   (READ)
   [100] On your own property -----> (GO TO Q7)
   In your home town -------> Is there a particular outdoor recreation site you go to when you (activity)?
   ______________________________[201]__YES **(GO TO Q4)**
   [202] NO **(GO TO Q7)**
   [3xx] Other MA town (Specify)
   [4xx] Other state (Specify)

4. How long does it take you to get to that site? (minutes)______

   (IF ACTIVITY 'STARTS FROM HOME', PROMPT FOR TIME TO GET TO THE SITE)

5. How did you usually travel there?

   DON'T READ LIST - CODING ONLY
   [1] walk
   [2] bike
   [3] mass transit
   [4] car
   [5] other
   [6] varies

6. Do you happen to know if the place where you usually (activity) is a government or a private area?
   IF GOVERNMENT, ASK-----> [1] local
   [2] state
   [3] federal

[4] not sure

IF PRIVATE, ASK--------> [5] nonprofit
[6] business
[7] individual
[8] not sure

IF DON'T KNOW --------> [9] DK

7. Are there OTHER PLACES where you (activity) for recreation?

RECORD--> TOWN IF IN MASS OR--> STATE IF OUT OF MASS

___________Place 1: Town __________ State
_____________Place 2: Town __________ State

8. **IF DONE OUT OF STATE...** Why do you go out of state to (activity)?
(Q3 OR Q7)

9. Do you feel that your opportunities to (activity) for recreation in Massachusetts are adequate?
[1] YES -------------v
[2] NO -----> **WHY DO YOU FEEL THAT WAY?**
[9] DK________

10. Considering the total amount of time you spend (activity), what percent of the time is spent on weekends?

Weekends _____%

11. Is there ANOTHER outdoor recreation activity you did during the WARM WEATHER in the last year?
IF NONE, GO TO Q23

12. In the last year, how many times did you (activity) for recreation?

13. Where did you usually (activity)?
(READ)
[100] On your own property ------------> **(GO TO Q15)**
Home town ---------->Is there a particular outdoor recreation site you go to when you (activity)?

__________________________________[201]___YES **(GO TO Q14)**
[202] NO **(GO TO Q15)**
[3xx] Other MA town (Specify)
[4xx] Other state (Specify)

14. How long does it take you to get to that site? (minutes)______

(IF ACTIVITY 'STARTS FROM HOME', PROMPT FOR TIME TO GET TO THE SITE)

15. Is there ANOTHER outdoor recreation activity you did during the WARM WEATHER in the last year?
IF NONE, GO TO Q23

16. In the last year, how many times did you (activity) for recreation?

17. Where did you usually (activity)?

(READ)

[100] On your own property ------------> (GO TO Q19)

Home town ---------->Is there a particular outdoor recreation site you go to when you (activity)?

____________________ [201]__YES (GO TO Q18)

[202] NO (GO TO Q19)

[3xx] Other MA town (Specify__________

[4xx] Other state (Specify)__________

18. How long does it take you to get to that site? (minutes)______

(IF ACTIVITY 'STARTS FROM HOME,' PROMPT FOR TIME TO GET TO THE SITE)

19. Is there ANOTHER outdoor recreation activity you participated in during the WARM WEATHER in the last year? **IF NONE, GO TO Q23**

20. In the last year, how many times did you (activity) for recreation?______

21. Where did you usually (activity)?

(READ)

[100] On your own property ------------> (GO TO Q23)

Home town ---------->Is there a particular outdoor recreation site you go to when you (activity)?

____________________ [201]__YES (GO TO Q23)

[202] NO (GO TO Q23)

[3xx] Other MA town (Specify) __________

[4xx] Other state (Specify)__________

22. How long does it take you to get to that site? (minutes)______

(IF ACTIVITY 'STARTS FROM HOME', PROMPT FOR TIME TO GET TO THE SITE)

23. **NOW THINKING ABOUT THE COLD WEATHER MONTHS,** what **OUTDOOR RECREATION ACTIVITY** do you do most often during the **COLD WEATHER?**

(IF NONE, GO TO 45)

24. In the last year, how many times did you (activity) for recreation?

25. Where did you usually (activity)?

(READ)

[100] On your own property ------------> **(GO TO Q29)**

Home town ---------->Is there a particular outdoor recreation site you go to when you (activity)?

____________________[201]__YES **(GO TO Q26)**

[202] NO **(GO TO Q29)**

[3xx] Other MA town (Specify) ____________

[4xx] Other state (Specify)____________

26. How long does it take you to get to that site? (minutes)_____

(IF ACTIVITY 'STARTS FROM HOME', PROMPT FOR TIME TO GET TO THE SITE)

27. How did you usually travel?

DON'T READ LIST - CODING ONLY

[1] walk
[2] bike
[3] mass transit
[4] car
[5] other
[6] varies

28. Do you happen to know if the place where you usually (activity) is a government or a private area?

IF GOVERNMENT, ASK-----> [1] local
[2] state
[3] federal
[4] not sure

IF PRIVATE, ASK--------> [5] nonprofit
[6] business
[7] individual
[8] not sure

IF DON'T KNOW ---------> [9] DK

29. Are there OTHER PLACES where you (activity) for recreation?

RECORD--> TOWN IF IN MASS OR--> STATE IF OUT OF MASS

Place 1: Town ________ State

________Place 2: Town ________ State

30. **IF DONE OUT OF STATE...** Why do you go out of state to (activity)?
(Q25 OR Q29)

31. Do you feel that your opportunities to (activity) for recreation in Massachusetts are adequate?

[1] YES ________
[2] NO -----> **WHY DO YOU FEEL THAT WAY?**____________________
[9] DK_____

32. Considering the total amount of time you spend (activity), what percent of the time is spent on weekends? _____%

33. Is there **ANOTHER** outdoor recreation activity you did during the **COLD WEATHER** in the last year? **IF NONE, GO TO Q45**

34. In the last year, how many times did you (activity) for recreation?_________

35. Where did you usually (activity)?
(READ)
[100] On your own property ------------> **(GO TO Q37)**
Home town ---------->Is there a particular outdoor recreation site you go to when you (activity)?

____[201] YES **(GO TO Q36)**
____[202] NO **(GO TO Q37)**
____[3xx] Other MA town (Specify)
____[4xx] Other state (Specify)

36. How long does it take you to get to that site? (minutes)________

(IF ACTIVITY 'STARTS FROM HOME', PROMPT FOR TIME TO GET TO THE SITE)

37. Is there ANOTHER outdoor recreation activity you did during the COLD WEATHER in the last year? **IF NONE, GO TO Q45**

38. In the last year, how many times did you (activity) for recreation?_______

39. Where did you usually (activity)?
(READ)
[100] On your own property ------------> **(GO TO Q41)**
Home town ---------->Is there a particular outdoor recreation site you go to when you (activity)?

________________________________[201]___YES **(GO TO Q40)**
[202] NO **(GO TO Q41)**
[3xx] Other MA town (Specify) ____________________
[4xx] Other state (Specify)____________________

40. How long does it take you to get to that site? (minutes)_______

(IF ACTIVITY 'STARTS FROM HOME', PROMPT FOR TIME TO GET TO THE SITE)

41. Is there ANOTHER outdoor recreation activity you participated in during the COLD WEATHER in the last year? **IF NONE, GO TO Q45**

42. In the last year, how many times did you (activity) for recreation? ________

43. Where did you usually (activity)?

(READ)

[100] On your own property ------------> **(GO TO Q45)**

Home town ---------->Is there a particular outdoor recreation site you go to when you (activity)?

______________________________ [201]__YES **(GO TO Q44)**
[202] NO **(GO TO Q45)**
[3xx] Other MA town (Specify)
[4xx] Other state (Specify)

44. How long does it take you to get to that site? (minutes)______

(IF ACTIVITY 'STARTS FROM HOME', PROMPT FOR TIME TO GET TO THE SITE)

45. Are there any WARM OR COLD weather activities you'd like to do, or do more often, but for some reason you can't? **IF YES, PLEASE LIST**
IF NO, GO TO Q47

____1st

____2nd

46. Why don't you (activity) more often?

____1st

____2nd

47. During the last year, how many times have you gone to Massachusetts beaches or recreation areas on the coast? **(IF NONE, GO TO Q49)**

48. To what coastal towns did you most often go to do this?

____1st

____2nd

49. Do you feel that Massachusetts has enough public facilities or areas that PROVIDE ACCESS TO THE COAST FOR RECREATION?

[1] yes
[2] NO ---->What changes would you suggest?__________________
[9] DK

50. How aware are you of the various state owned recreation areas in Massachusetts? Would you say you are...

[1] very aware
[2] somewhat aware
[3] unaware/DK **(GO TO Q54)**

51. Which state owned recreation areas have you visited in the last twelve months?

1st ______________________________

2nd ______________________________

(IF NONE, GO TO Q54)

CODING ONLY [1] Yes [2] No

52. Thinking about the quality of state owned recreation areas in Massachusetts, would you say you are...

[1] very satisfied
[2] somewhat satisfied
[3] somewhat dissatisfied
[4] very dissatisfied
[9] DK (GO TO Q54)

53. Why do you feel that way? ______________________________

54. Do you think that the state government should spend more of its available outdoor recreation funds...

			BOTH	**NEITHER**	**DK**
[1] on water-based facilities	or	[2] land-based facilities	[3]	[4]	[9]
[1] for maintaining existing areas	or	[2] developing new areas	[3]	[4]	[9]
[1] for developed recreation areas	or	[2] conservation areas	[3]	[4]	[9]

55. Are there any other specific recreation or conservation needs which the state ought to address?

56. Do you feel there are enough public campgrounds provided in Massachusetts?

[1] Yes
[2] Don't Know
[3] NO, In what county should additional campgrounds be located?

County 1 ____________County 2____________________

__________________(IF UNSURE OF COUNTY, ASK...

________________Town 1 _______Region (CIRCLE MAX OF TWO)___

OR

__________________Town 2 ________

Berkshires
Connecticut River Valley
Central Mass
North Shore
Greater Boston
South Shore
Cape & Islands
No preference/anywhere

57. Does a physically disabled person live in your household?

[1] Yes, other [2] yes, respondent [3] no

58. Do you have any suggestions for improving access to state owned recreation and conservation areas for disabled persons?

---

59. Are you a member of a HEALTH, SPORT OR FITNESS CLUB?

YES -----> What activities do you usually do there?
(DO NOT READ, CHECK ALL THAT APPLY)

__Aerobics-dance
__Nautilus-weights
__Swimming
__Tennis
__Squash
__Racquetball
__Exercise bike-rowing machine
Other

NO -----> Have you ever been a member of one?

[1] Yes [2] No

60. In a typical week, how many days do you exercise hard enough to make your heart beat fast? (IF NONE, GO TO 62) ______

61. About how many minutes each time you do that?_____

FINALLY, I'D LIKE TO ASK YOU A FEW QUESTIONS FOR STATISTICAL PURPOSES.

62. How many years have you lived in Massachusetts?________

63. How many children under eighteen live in your household?________

64. In school, what is the highest grade you've completed?

CIRCLE ONE NUMBER

(IF TRADE SCHOOL, ASK YEARS BEYOND HIGH SCHOOL)

Elementary	01 02 03 04 05 06
Jr High	07 08 09
High School	10 11 12
College	13 14 15 16
Graduate	17 18 19 20 21
Refused [99]	

65. What is your year of birth? __________

66. Just to assure the inclusion of all groups in the survey, which of the following best describes your racial or ethnic background? Are you:

[1] white
[2] black
[3] hispanic
[4] asian, or
[5] some other

(DO NOT READ) [9] refused

67. Would you say that the total income from all persons living in your household is...

[1] under $20,000
[2] $20 to $30,000
[3] $30 to $40,000
[4] $40 to $50,000, or
[5] over $50,000?
[9] DK/refused

68. **RECORD PERSON'S SEX.** [1] male ____[2] ____

THIS CONCLUDES THE SURVEY! THANKS VERY MUCH FOR YOUR HELP.

Supplemental Supply and Demand Methodology

In the typical SCORP, standards are used to determine the recreational facility capacity of a region's resources. These standards, which require a certain degree of professional judgment, are often criticized for not accounting for regional characteristics and for variation in recreation behavior within the same activity in different areas. Often standards are applied across the board to each activity without consideration as to the type of setting or type of community in which the recreational experiences take place. An attempt in the development of the methodology was made in this study to adjust for these inherent problems. While standards should not be taken at full face value, they do provide a relative measure of supply and demand and do permit a detailed analysis of these two factors, supply and demand, to be undertaken. It should be noted that recreation standards are based on professional interpretations of what is reasonable and do not vary from the standpoint of the individual recreation participant's interpretation . Standards are based on the reliability of the inventory data and demand survey. Supply and demand measures also take into consideration a number of additional assumptions. Therefore, it necessary to share the assumptions and underlying procedures that are undertaken to determine the supply and demand dimensions of the regional analysis. For these reasons, definitions, procedures and an example of the analysis applied to one activity in one region are presented first. The overview of these items should provide the reader with a better understanding of the regional analysis and findings and the rationale behind the identification of regional needs.

First, the following provides definitions of commonly used terms incorporated into supply and demand analysis:

Activity Season: the time period in the year during which at least 80% of the participation of the activity occurs, also known as peak-use season and used to determine the number of design days.

Adjusted Participation Rate: the percentage of the regional population who stated that they participated once in a particular recreational activity; used to determine the estimate of total regional recreation participants.

Activity Participation Times: the number of times an individual participated in a particular recreation activity during the previous twelve months, expressed in median numbers for calculating activity days.

Adjusted Regional Population: the number of residents who inhabit a planning region which is then adjusted for out-of-state visitors or tourists.

Capacity Standard: the number of activity-uses or person-uses that can be accommodated by one recreation resource unit of supply at a given site.

Design Day: a day of full or peak-use activity for a given recreational activity.

Design Day Capacity: the number of activity-uses that a given unit of a recreation facility can accommodate on a given design day.

Design Day Need: the difference between the design day demand and the design day carrying capacity.

Dissatisfaction Index: a percentage rating of dissatisfaction expressed by recreation participants in regard to the availability of opportunities for the given recreational activity indexed to the statewide average. For example, a dissatisfaction index score of 150% would indicate that participants in that activity have expressed dissatisfaction with opportunities for the activities at a rate 50% higher than the state average. The dissatisfaction index targets activities and regions with high dissatisfaction scores.

Instant Capacity: the number of uses that a unit of recreation facility can accommodate at one time.

Latent Demand Activity Days: the number of activity days desired to be participated in more by an individual, weighted by an "actual" additional participation percentage and a weighted number of times of participation. In this study, the weighted actual latent demand participation rate was estimated to be 50 percent of the current actual participation rate. If the latent demand participation rate was stated to be 5 percent, it was estimated that the actual latent demand would be one-half of the stated rate or 2.5 percent. The weighted number of times was 50 percent of the actual median times that one the participants stated that they would participate. If the actual median times participating was 20 times per year, the weighted median number of times that one would participate was 10 times. These latent demand factors were built into the estimate of participations for future planning purposes. This provides insights into the potential possibilities of participation increasing in the future.

Surplus/Deficit Index: the percentage of capacity in surplus or in deficit; a positive percentage indicates how much excess capacity is available or in surplus and a negative percentage indicates how much capacity is needed, or how much deficit exists; if capacity meets demand perfectly then the need index would be zero percent (0%).

Need Priority Rating: a rated need score based on the surplus/deficit index, the dissatisfaction index, the travel barrier index, and subjective analysis of the various SCORP surveys. The weightings given to each of these factors were: the surplus/deficit index -- 50 percent, the dissatisfaction index -- 225 percent, and the travel barrier index -- 25 percent. The higher the need priority rating the higher the need the state or region.

Person Days or Person-Uses: the number of persons using a recreation facility on a given design day; often referred to as activity days.

Travel Barrier Index: a percentage rating of travel time taken to participate in an activity indexed to the statewide travel time average for the activity. For example, a travel barrier index score of 180% would indicate that participants have an 80% higher travel time than the statewide average. The rationale behind this index is to identify activities and planning regions where travel times are above normal and to make recommendations to reduce travel time if appropriate. Travel time is also a cost factor and if it is identified as being high, it may be acting as a barrier to higher participation rates among participants and non-participants.

Turnover Rate: the number of times that different "sets" of users or "sets" of uses can occupy a recreation facility during a peak or design day; rates are adjusted for each region based or urban and non-urban regional character.

The methodology for determining supply and demand generally followed the procedures outlined in the 1978 Massachusetts SCORP. The procedures were altered slightly to take into consideration latent demand, regional standards variation and certain limitations in the methodology of the demand survey. Furthermore, the results of the analyses undertaken here are presented only in terms of the typical peak day or design day. For example, on a given day of peak use, the basic question might be: what is the ability of our recreation resources to handle peak activity demand on a day such as the 4th of July? Latent demand adjusts the stated demand factor by including a dimension of additional desired activity demand. This additional demand factor is measured by asking individuals if they would like to participate more in a given activity. If yes, this factor is considered the latent demand participation rate. It is then assumed that only 50 percent or half of those individuals who stated they wanted to participate more will actually participate more and they will participate at a rate of 50 percent or half of the median times one would normally expect an average participant to participate. This latent demand factor then builds into the analysis potential future demand increases.

An example of the methodology that was modified and adopted for the 1988 Massachusetts SCORP is shared here for the activity of tennis in the Southeast Massachusetts Region. The process of determining supply and demand and then analyzing supply and demand relative to each activity within each region is outlined in Figure SD1.

First, the instance capacity standards and demand activity rates which apply to the activity of tennis for the Southeastern Massachusetts Planning Region are:

Activity: Tennis
Region: Southeastern Massachusetts
Adj. Regional Population: 1,112,260 people
Regional Character: 8 % urban and 92% non-urban

Capacity Standards for Tennis
Instant Capacity: 4 persons per court
Turnover Ratio: 5.9 uses per design day
Design Days: 69.7 design days
Design Day Capacity: 23.6 person-uses per court

Demand Survey Results for Tennis in SE Mass Region
Participation Rate: 7.9%
Latent Part. Rate: 1.3%
Times Participated: 20 times (median)

Supply Inventory Results for Tennis in SE Mass Region
# Tennis Courts: 917 courts

The analysis indicated that 1,829,668 days of tennis were demanded on an annual basis. When divided by the number of design days (69.7 design days), the typical design day indicated a demand of 26,251 person-uses. This was calculated by multiplying the adjusted regional population of 1,112,260 by the participation rate of 7.9%. This resulted in 87,868 tennis participants and these participants participated on average (using the median number of times) 20 times per year or a total of 1,757,360 activity days or person-uses. Latent demand resulted in an additional 72,296 activity days or person-uses. Latent demand was determined by multiplying the adjusted regional population (1,112,260 people) by the latent demand participation rate of 1.3% which totals an additional 14,459 participants. One-half of these additional participants, it is assumed, will actually participate at half of the stated rate of 20 times (the median) per year. This totals 14,459 times 50% equals 7,229 participants times 10 activity uses equals 72,296 additional activity days or person-uses. Latent demand added to participant days adds to a grand total of 1,829,668 activity days or person uses. When divided by the seasonal design days of 69.7, the total design day demand totals 26,251 activity days or person uses. The inventory indicates that this region has 917 tennis courts These tennis courts can handle 21,641 person-uses on a daily design day basis. This was determined by multiplying the design day capacity (23.6 person-uses per court) by 917 courts in the region. This results in a deficit of 4,609 person uses or a shortage of approximately 195 tennis courts (4609 person uses divided by 23.6 person uses per design day per court).

Special Considerations for Determining Supply and Demand

The above example should provide some insights into the methodology used in the supply and demand analysis and the nature of the assumptions and value judgements made in the calculations. Further detail related to several special considerations and refinements to the procedure are shared here.

Standards Applied to Urban and Non- Urban Areas.

First, it is necessary to note that urban and non-urban distinctions are important to capacity and use levels at selected types of recreational facilities. These considerations are vital to the estimates, as physical and social resource characteristics vary widely across the Commonwealth, as do recreation experiences and expectations. To accommodate these differences within the methodology of supply and demand analysis, each of the standards, "instant capacity standards," "turnover ratios" and "design days" were adjusted to reflect the character of the planning region. The adjustments were made on the distribution of urban and non-urban communities within each planning region based on the community classification system put forth by the Massachusetts Institute for Social and Economic Research (1988).

"Instant Capacity" is defined as the number of persons which one recreation resource unit can handle at one time. These figures of instant capacity were largely drawn from the 1976 Massachusetts SCORP (1976); 1978 Massachusetts SCORP (1978), the National Recreation and Park Association's Recreation, Park and Open Space Standards and Guidelines (1983) and informed, knowledgeable activity sources and experts. Thus, in our example above, the instant capacity of a tennis court is four persons per court. While this special instant capacity standard did not vary by regional character in this study, some of the standards do. For example, saltwater fishing's instant carrying capacity varies from seven persons per mile in urban areas to two persons per mile in non-urban areas. While, both areas may physically be able to handle the recreational use at the higher level, the lower rates in the non-urban areas take into consideration the psychological and social carrying capacity of these types of areas. In other words, one expects to encounter and, to a certain degree, tolerate higher uses in more urbanized areas than in rural areas. Saltwater fishing from an MDC beach in the Boston area is quite different from saltwater fishing on a remote beach in Nantucket. The expectations and the experiences are different and therefore should be reflected in the capacity standards.

"Turnover Rate" is defined as the number of sets of users a recreation facility can handle on a given design or peak use day. These figures were obtained in a similar fashion as the instant capacity standards. Thus, in our example the turnover ratio for tennis in Southeast Massachusetts was 5.9 uses per court. This turnover ratio was adjusted to the character of the regional (8% urban character, 92% non-urban). The turnover ratio for urban areas is eight uses per day per court and for non-urban areas the rate is 5.75 uses per court per design day. The weighted turnover ratio by urban and non-urban character resulted in the ratio of 5.9 uses per court. Again, one would expect heavier use on a typical peak day in an urban area than in a non-urban area. The statewide averages for instant capacity and turnover rates are shown in Table SD1 for comparative purposes.

"Design Day" is defined as a day of full use of a recreation facility. The 1978 Massachusetts SCORP developed the allocation of design days statewide. The design day concept was based on the procedure developed by the Heritage Recreation and Conservation Service (HCRS, 1975) and refined during the 1978 SCORP planning process. This adopted technique took into consideration the Commonwealth's holiday season and seasonal variation in activities by region. This resulted in adjusting the number of design days from the base of 118 design days as suggested by HCRS (1975) up to an annual 129 design days for the state. From this point the number of design days was further adjusted based on the different length of the season for each individual recreation activity for each region in the state. In this analysis, the 1978 Massachusetts SCORP design day calculations were adjusted from the 13 planning regions in that study down to the seven planning regions for the 1988 study. This overall impact of this analysis results in the definition of a "season of activity" for each activity for each of the planning regions. The design day concept, as it is adjusted by activity and by region, is one of the critical inputs in the final calculation of annual capacity. Finally, the annual capacity is then divided by the total number of design days to determine what the typical design day or day of peak use would be at the region's particular recreational facilities. A matrix of design days for each of the regions is presented in Table SD2.

Figure SD1 Supply and Demand Analysis Calculation Procedure

DETERMINE REGIONAL DESIGN DAY CARRYING CAPACITY

STEP 1 Determine Design Day Capacity Per Recreation Resource Unit

Adjusted* Instant Capacity (persons/unit)	X	Adjusted* Turnover Rate (uses/day)	=	Design Day Capacity Per Recreation Resource Unit (persons/unit)

(*Adjusted for Urban and Non-Urban Character of Planning Region)

STEP 2 Determine Regional Design Day Carrying Capacity

Design Day Capacity Per Recreatio Resource Unit (person days/unit)	X	Number of Recreati Resource Units Per Region (units)	=	Regional Design Day Carrying Capacity (person days)

DETERMINE REGIONAL DESIGN DAY ACTIVITY DEMAND

Step 1: Determine Number of Regional Activity Participants

Adjusted* Regional Population	X	Adjusted Participation Rate	=	Number of Regional Participants

(*Adjusted for non-resident population)

Step 2: Determine Number of Regional Activity Days

Number of Regional Participants	X	Adjusted Regional Activity Participat Times (Median Times)	=	Regional Demand Activity Days

Step 3: Determine Regional Latent Demand Activity Days

Adjusted Regional Population	X	Adjusted Latent Demand Participati Rate	X	50%	X	Adjusted Regional Activity Participation Times (Median Times)	X	50%
	=	Regional Latent Demand Activity Days						

Step 4: Determine Total Regional Demand Activity Days

Regional Demand Activity Days	+	Regional Latent Demand Activity Days	=	Total Regional Demand Activity Days

Step 5: Determine Design Day Uses

Total Regional Demand Activity Days	+	Adjusted Regional Design Days	=	Design Day Activity Demand

Determine Regional Design Day Deficit/Surplus

Step 1:

Regional Design Day Carrying Capacity (person days)	-	Regional Design Day Activity Demand	=	Regional Design Day Surplus/Deficit

Determine Number of Units Needed Per Design Day If Regional Deficit Exists

Step 2:

Regional Design Day Deficit (person days)	+	Design Day Capacity Per Recre Resource Unit (person days/unit)	=	Number of Units Needed

Table SD1. Statewide Average Instant Capacity and Turnover Rates for Recreation Facilities

Activity	Instant Capacity Standards (Carrying Capacity at one time)	Statewide Turnover Ratios (Ave. uses/day based on urban/non-urban character)
Bicycling	11.1 persons per mile	40.4 uses per day
Boating		
Boat Ramps	4 persons per ramp	52.8 uses per day
Boat Slips and Moorings	4 persons per slip or mooring	1 use per day
Camping/Cabin Lodging		
Tent Camping	4 persons per site	1 use per day
Trailer Camping	4 persons per site	1 use per day
Cabins	4 persons per cabin	1 use per day
Field Sports		
Baseball/Softball	20 persons per field	2.1 uses per day
Football/Soccer	20 persons per field	2.1 uses per day
Open Space Recreation Areas	20 persons per field	2.1 uses per day
Playgrounds/Totlots	11.1 persons per field	2.1 uses per day
Fishing		
Freshwater Fishing	0.4 persons per acre	4.2 uses per day
Saltwater Fishing	2.6 persons per mile	4.2 uses per day
Golf	8 persons per hole	3.3 uses per day
Hiking	10 persons per mile	8 uses per day
Ice Skating	0.02 persons per sq. ft.	4 uses per day
ORV (Motorcross/4-Wheeling)	5.6 persons per mile	2.1 uses per day
Outdoor Basketball	10 persons per court	6 uses per day
Picnicking	5.1 persons per table	2.1 uses per day
Target/Archery Shooting	4.9 persons per range	2 uses per day
Skiing (Downhill)	DNA Lift capacity per hour	4 uses per day
Skiing (Cross Country)	10 persons per mile	8 uses per day
Snowmobiling	5.6 persons per mile	2.1 uses per day
Swimming		
Freshwater Swimming	1.6 persons per linear ft. (1/2 lin. ft)	2.1 uses per day
Swimming (pool)	0.04 persons per sq. ft. (1/27sq. ft.)	2.1 uses per day
Saltwater Swimming	1.6 persons per linear ft. (1/2 lin. ft.)	2.1 uses per day
Tennis	4 persons per court	6 uses per day
Nature Observation	10 persons per mile	8 uses per day

Table SD2 Regional Design Days

Region--> ***Activity***	Berkshires	Conn Valley	Central Mass	NE Mass	MDC	SE Mass	Cape & Islands	Statewide Average
Bicycling	55.7	53.6	46.9	67.9	67.9	68.4	31.6	56.0
Boating								
Boat Ramps	35.6	45.1	42.1	46.3	46.3	50.6	32.3	42.6
Boat Slips and Moorings	35.6	45.1	42.1	46.3	46.3	50.6	32.3	42.6
Camping								
Tent Camping	46.8	47.0	55.4	50.9	50.9	60.1	34.4	49.4
Trailer Camping	46.8	47.0	55.4	50.9	50.9	60.1	42.8	50.6
Cabins	46.8	47.0	55.4	50.9	50.9	60.1	42.8	50.6
Field Sports								
Baseball/Softball	59.8	68.8	71.5	68.0	68.0	69.7	39.4	63.6
Football/Soccer	59.8	68.8	71.5	68.0	68.0	69.7	39.4	63.6
Open Space Recreation Areas	59.8	68.8	71.5	68.0	68.0	69.7	39.4	63.6
Fishing								
Freshwater Fishing	66.1	66.1	66.1	66.1	66.1	66.1	66.1	66.1
Saltwater Fishing	66.1	66.1	66.1	66.1	66.1	66.1	66.1	66.1
Golf	63.2	71.8	67.2	68.0	68.0	71.1	34.4	63.4
Hiking	63.8	68.0	71.9	64.2	64.2	69.2	31.6	61.8
Ice Skating	56.5	77.9	75.6	77.7	86.3	83.4	75.7	76.2
ORV (Motorcross/4-Wheeling)	74.1	74.1	76.5	74.1	84.4	84.4	84.4	78.9
Picnicking	40.2	43.2	35.6	43.2	43.2	44.8	31.6	40.3
Target/Archery Shooting	41.7	41.7	41.7	41.7	41.7	41.7	41.7	41.7
Skiing (Downhill)	46.7	39.9	37.3	38.2	32.5	5.0	5.0	29.2
Skiing (Cross Country)	46.7	39.9	37.3	38.2	32.5	5.0	5.0	29.2
Snowmobiling	46.7	39.9	37.3	38.2	32.5	5.0	5.0	29.2
Swimming								
Freshwater Swimming	31.5	28.2	29.5	32.3	32.3	34.0	31.6	31.3
Swimming (pool)	31.5	29.6	29.5	32.3	32.3	34.0	31.6	31.5
Saltwater Swimming	31.5	29.6	29.5	32.3	32.3	34.0	31.6	31.5
Tennis	59.8	68.8	71.5	68.0	68.0	69.7	32.9	62.7
Nature Observation	88.1	88.1	88.1	88.1	88.1	88.1	88.1	88.1

Table SD3 Regional Use (Participation) Standards for Carrying Capacity by Urban/Non-Urban Factors

Urban/Non-Urban Use Standards		***Region:***	Berk-shires	Conn Valley	Cent Mass	NE Mass	MDC	SE Mass	Cape & Islands	Statewide Average
		Urban	6%	7%	7%	14%	35%	8%	0%	11%
		Non-Urban	94%	93%	93%	86%	65%	92%	100%	89%
Activity		*Standard Rates by Use Levels*								
Bicycling	Urban	20.0 pers./mile								
	Non-Urban	10.0 pers./mile								
	Total	pers./mile	10.6	10.7	10.7	11.4	13.5	10.8	10.0	11.1
Boating										
Boat Ramps	Urban	4.0 pers./ramp								
	Non-Urban	4.0 pers./ramp								
	Total	pers./ramp	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Boat Slips and Moorings	DNA	4.0 pers./ramp	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Camping										
Tent Camping	DNA	4.0 pers./site	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Trailer Camping	DNA	4.0 pers./site	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Cabins	DNA	4.0 pers./cabin	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Field Sports										
Baseball/Softball	Urban	20.0 pers./field								
	Non-Urban	20.0 pers./field								
	Total		20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Football/Soccer	Urban	20.0 pers./field								
	Non-Urban	20.0 pers./field								
	Total		20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Open Space Recreation Areas	Urban	20.0 pers./field								
	Non-Urban	20.0 pers./field								
	Total		20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Playgrounds/Totlots	Urban	20.0 pers./field								
	Non-Urban	10.0 pers./field								
	Total		10.6	10.7	10.7	11.4	13.5	10.8	10.0	11.1

		Standard Rates by Use Levels	Berk-shires	Conn Valley	Cent Mass	NE Mass	MDC	SE Mass	Cape & Islands	Statewide Average
Fishing										
Freshwater Fishing	Urban	1.5 pers./ac.								
	Non-Urban	0.25 pers./ac.								
	Total		0.3	0.3	0.3	0.4	0.7	0.4	0.3	0.4
Saltwater Fishing	Urban	7.0 pers./mile								
	Non-Urban	2.0 pers./mile								
	Total		2.3	2.4	2.4	2.7	3.8	2.4	2.0	2.6
Golf	DNA	8.0 pers./hole								
	DNA	8.0 pers./hole								
	Total		8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Hiking	DNA	50.0 pers./mile								
	DNA	5.0 pers./mile								
	Total		7.7	8.2	8.2	11.3	20.8	8.6	5.0	10.0
Ice Skating	DNA	0.02 pers/sq.ft.	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
ORV (Motorcross/4-Wheeling)	Urban	10.0 pers./mile								
	Non-Urban	5.0 pers./mile								
	Total		5.3	5.4	5.4	5.7	6.8	5.4	5.0	5.6
Outdoor Basketball	Urban	10.0 pers./court								
	Non-Urban	10.0 pers./court								
	Total		10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Picnicking	Urban	6.0 pers./table								
	Non-Urban	5.0 pers./table								
	Total		5.1	5.1	5.1	5.1	5.4	5.1	5.0	5.1
Target/Archery Shooting	Urban	12.0 pers./range								
	Non-Urban	4.0 pers./range								
	Total		4.5	4.6	4.6	5.1	6.8	4.6	4.0	4.9
Skiing (Downhill)	DNA	-- (pers./hr.) --	--	--	--	--	--	--		0.0
Skiing (Cross Country)	Urban	50.0 pers./mile								
	Non-Urban	5.0 pers./mile								
	Total		7.7	8.2	8.2	11.3	20.8	8.6	5.0	10.0

		Region: *Standard Rates*	Berk-shires	Conn Valley	Cent Mass	NE Mass	MDC	SE Mass	Cape & Islands	Statewide Average
Snowmobiling	Urban	10.0 pers./mile								
	Non-Urban	5.0 pers./mile								
	Total		5.3	5.4	5.4	5.7	6.8	5.4	5.0	5.6
Swimming										
Freshwater Swimming	Urban	2.0 pers./ft.								
	Non-Urban	1.5 pers./ft.								
	Total		1.5	1.5	1.5	1.6	1.7	1.5	1.5	1.6
Swimming (pool)	DNA	0.04 pers./sq.ft.								
	DNA	0.04 pers./sq.ft.								
	Total		0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Saltwater Swimming	Urban	2.0 pers./sq.ft.								
	Non-Urban	1.5 pers./sq.ft.								
	Total		1.5	1.5	1.5	1.6	1.7	1.5	1.5	1.6
Tennis	DNA	4.0 pers./court								
	DNA	4.0 pers./court								
	Total		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Nature Observation	Urban	50.0 pers./mile								
	Non-Urban	5.0 pers./mile								
	Total		7.7	8.2	8.2	11.3	20.8	8.6	5.0	10.0

DNA=Does not apply

Table SD4 Demand Activity Information for Recreational Activity Per Region

Region: ***Activity***	Berk-shires	Conn Valley	Central Mass	NE Mass	MDC	SE Mass	Cape & Islands	Statewide Average
Swimming								
Percent Participating	45.6%	47.1%	50.5%	49.0%	46.4%	52.7%	54.8%	49.5%
Participate More (LD)	3.3%	4.6%	5.9%	5.3%	5.1%	2.5%	4.8%	4.5%
Percent Dissatisfied	9.8%	32.4%	30.0%	35.5%	29.4%	20.3%	14.5%	25.4%
Times Participated (Median)	60.0	26.0	30.0	22.0	25.0	28.0	50.0	30.00
Travel Time Minutes (Mdn)	15.0	15.0	30.0	15.0	20.0	22.5	6.0	15.00
Percent Part. Wkends (Mdn)	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Hiking								
Percent Participating	53.6%	38.7%	31.5%	39.4%	46.2%	36.2%	40.6%	14.6%
Participate More (LD)	0.8%	2.4%	4.9%	5.3%	2.2%	2.1%	3.0%	3.0%
Percent Dissatisfied	6.7%	13.0%	26.0%	31.5%	15.5%	13.4%	18.8%	17.3%
Times Participated (Median)	100.0	52.0	52.0	24.0	52.0	52.0	50.0	52.00
Travel Times is Minutes	20.0	27.5	20.0	20.0	20.0	20.0	25.0	20.00
Percent Participation Wkends	50.0%	50.0%	30.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Skiing (Downhill)								
Percent Participating	16.7%	11.6%	12.1%	19.3%	17.9%	13.0%	11.3%	11.3%
Participate More (LD)	2.5%	4.8%	6.2%	3.9%	4.6%	4.2%	5.5%	4.6%
Percent Dissatisfied	24.3%	34.0%	23.5%	49.4%	50.5%	67.2%	67.4%	47.4%
Times Participated (Median)	15.0	10.0	10.0	10.0	10.0	10.0	7.0	10.00
Travel Times is Minutes	60.0	60.0	45.0	120.0	120.0	150.0	180.0	120.00
Percent Participation Wkends	45.0%	80.0%	80.0%	75.0%	80.0%	80.0%	75.0%	80.0%
Boating								
Percent Participating	6.3%	10.0%	7.2%	14.8%	10.8%	9.6%	12.9%	10.6%
Participate More (LD)	1.7%	2.0%	2.6%	3.5%	3.7%	1.0%	3.5%	2.7%
Percent Dissatisfied	20.0%	33.3%	16.7%	44.7%	22.6%	17.2%	2.9%	23.4%
Times Participated (Median)	12.0	15.0	20.0	15.0	14.0	15.0	22.5	15.00
Travel Times is Minutes	45.0	20.0	57.5	22.5	45.0	42.5	10.0	25.00
Percent Participation Wkends	50.0%	77.5%	75.0%	77.5%	70.0%	80.0%	80.0%	80.0%
Biking								
Percent Participating	4.6%	8.4%	8.9%	8.1%	8.6%	7.3%	14.1%	8.8%
Participate More (LD)	0.4%	1.0%	3.0%	2.6%	1.9%	1.5%	2.1%	1.8%
Percent Dissatisfied	0.0%	29.4%	0.0%	23.1%	15.8%	27.3%	11.8%	18.8%
Times Participated (Median)	45.0	40.0	25.0	25.0	37.5	25.5	50.0	30.00
Travel Times is Minutes	20.0	20.0	30.0	45.0	22.5	10.0	15.0	20.00
Percent Participation Wkends	50.0%	40.0%	40.0%	50.0%	50.0%	50.0%	30.0%	50.0%

Region:	Berk-shires	Conn Valley	Central Mass	NE Mass	MDC	SE Mass	Cape & Islands	Statewide Average
Activity								
Tennis								
Percent Participating	6.7%	5.6%	4.9%	7.0%	11.0%	7.9%	9.9%	7.9%
Participate More (LD)	0.8%	1.0%	1.3%	3.0%	3.0%	1.3%	2.3%	1.9%
Percent Dissatisfied	9.1%	25.0%	14.3%	18.8%	22.2%	11.1%	31.3%	19.8%
Times Participated (Median)	28.0	26.0	12.0	30.0	25.0	20.0	24.5	25.00
Travel Times is Minutes	15.0	10.0	5.0	10.0	10.0	10.0	9.0	10.00
Percent Participation Wkends	40.0%	62.5%	25.0%	40.0%	50.0%	40.0%	50.0%	50.0%
Ice Skating								
Percent Participating	7.5%	8.0%	7.9%	9.7%	7.8%	7.7%	4.1%	7.6%
Participate More (LD)	1.3%	1.0%	3.3%	2.6%	0.7%	1.0%	3.5%	1.8%
Percent Dissatisfied	0.0%	60.0%	28.6%	36.7%	10.3%	12.5%	16.7%	24.3%
Times Participated (Median)	15.0	10.0	5.5	6.0	10.0	12.0	12.0	10.00
Travel Times is Minutes	15.0	10.0	10.0	15.0	10.0	10.0	10.0	10.00
Percent Participation Wkends	45.0%	80.0%	65.0%	80.0%	90.0%	32.5%	50.0%	50.0%
Golf								
Percent Participating	3.3%	7.2%	7.9%	7.0%	7.4%	5.2%	9.2%	6.9%
Participate More (LD)	1.3%	0.8%	0.3%	2.6%	1.7%	0.4%	1.6%	1.3%
Percent Dissatisfied	0.0%	9.1%	26.7%	12.5%	17.4%	7.7%	10.7%	13.3%
Times Participated (Median)	16.0	22.5	30.0	20.0	24.0	25.0	20.0	24.00
Travel Times is Minutes	15.0	15.0	17.5	20.0	15.0	15.0	10.0	15.00
Percent Participation Wkends	50.0%	75.0%	50.0%	75.0%	62.5%	50.0%	50.0%	50.0%
Fishing								
Percent Participating	5.9%	8.6%	6.2%	9.5%	3.9%	3.8%	11.1%	6.9%
Participate More (LD)	8.8%	1.0%	2.0%	1.6%	0.3%	1.0%	1.2%	1.1%
Percent Dissatisfied	33.3%	15.0%	40.0%	37.5%	18.2%	25.0%	14.8%	24.0%
Times Participated (Median)	20.0	15.0	12.0	15.0	15.0	11.0	20.0	15.00
Travel Times is Minutes	20.0	17.5	20.0	20.0	30.0	45.0	15.0	20.00
Percent Participation Wkends	50.0%	20.0%	75.0%	75.0%	85.0%	47.4%	50.0%	50.0%
Field Sports								
Percent Participating	2.1%	6.8%	8.5%	7.9%	6.8%	5.4%	3.2%	6.0%
Participate More (LD)	1.7%	0.8%	1.6%	0.9%	0.7%	0.8%	0.2%	0.9%
Percent Dissatisfied	0.0%	0.0%	0.0%	46.2%	20.0%	14.3%	0.0%	15.2%
Times Participated (Median)	35.0	25.0	20.0	22.0	28.0	28.0	24.0	24.00
Travel Times is Minutes	15.0	12.5	5.0	10.0	10.0	5.0	10.0	10.00
Percent Participation Wkends	37.5%	25.0%	50.0%	50.0%	70.0%	32.5%	98.0%	50.0%

Region: ***Activity***	Berkshires	Conn Valley	Central Mass	NE Mass	MDC	SE Mass	Cape & Islands	Statewide Average
Camping								
Percent Participating	2.1%	10.0%	7.5%	5.8%	3.4%	6.5%	2.8%	5.6%
Participate More (LD)	0.4%	1.6%	0.7%	0.5%	1.0%	0.6%	0.7%	0.8%
Percent Dissatisfied	33.3%	30.0%	40.0%	33.3%	30.0%	26.7%	50.0%	32.9%
Times Participated (Median)	4.0	6.0	6.0	6.0	5.0	10.0	4.0	6.00
Travel Times is Minutes	195.0	85.0	105.0	120.0	120.0	60.0	180.0	120.00
Percent Participation Wkends	47.5%	80.0%	98.0%	50.0%	85.0%	80.0%	98.0%	80.0%
Picnicking								
Percent Participating	2.5%	6.0%	3.0%	0.9%	3.6%	2.3%	3.5%	3.2%
Participate More (LD)	0.4%	0.0%	0.0%	0.5%	0.2%	0.2%	0.2%	0.2%
Percent Dissatisfied	0.0%	23.1%	28.6%	50.0%	25.0%	28.6%	25.0%	26.1%
Times Participated (Median)	9.0	10.0	5.0	15.0	9.0	10.0	15.0	11.00
Travel Times is Minutes	20.0	20.0	57.5	60.0	15.0	25.0	12.0	20.00
Percent Participation Wkends	99.0%	98.0%	80.0%	86.5%	90.0%	50.0%	50.0%	80.0%

STATE FACILITY MANAGERS SURVEY: 1988 SCORP

Atlantic Research Company
77 North Washington St.
Boston, Massachusetts 02114

This survey is to identify major issues affecting park and recreation opportunity on state properties. We are asking managers with direct or indirect responsibility for one or more state facilities to comment on these issues. Please complete the survey and return it as soon as possible.
Thanks for your help!

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1. Do you manage a state facility? NO YES ---> In Which County? ____________

2. Please describe current conditions at your facility(s) and whether they severely limit your ability to provide recreation and/or conservation services. If a problem exists, please note its nature and source.

	CURRENT CONDITION 1=GOOD				5=BAD	NA	SEVERELY LIMITS PROVISION OF RECREATION	CONSERVATION
Air Quality	1	2	3	4	5	9	YES	YES
Water Quality	1	2	3	4	5	9	YES	YES
Water Quantity	1	2	3	4	5	9	YES	YES
Soil Quality	1	2	3	4	5	9	YES	YES
Erosion	1	2	3	4	5	9	YES	YES
Health of Vegetation	1	2	3	4	5	9	YES	YES
Wildlife	1	2	3	4	5	9	YES	YES
Nuisance Animals	1	2	3	4	5	9	YES	YES

State Facility Managers Survey

	CURRENT CONDITION 1=GOOD				5=BAD	NA	SEVERELY LIMITS PROVISION OF RECREATION	CONSERVATION
Aesthetic Appeal	1	2	3	4	5	9	YES	YES
Historic and Cultural Resources	1	2	3	4	5	9	YES	YES

3. To what extent do concerns currently exist at your site(s) in each of the following areas?

MAINTENANCE	Major Concern	Minor Concern	No Concern	Not Applicable
Equipment	3	2	1	9
Staffing	3	2	1	9
Vandalism	3	2	1	9
Litter	3	2	1	9

Please describe the single most serious concern cited above, giving your suggestions on how it might best be resolved.

PROGRAMS & SERVICES	Major Concern	Minor Concern	No Concern	Not Applicable
Variety	3	2	1	9
Quantity	3	2	1	9
Staffing	3	2	1	9
Crowdedness	3	2	1	9
Conflicting Use	3	2	1	9
Visitor Safety	3	2	1	9
Legal Liability	3	2	1	9

Please describe the single most serious concern cited above, giving your suggestions on how it might best be resolved.

PUBLIC AWARENESS OF:	Major Concern	Minor Concern	No Concern	Not Applicable
Emergency Procedures	3	2	1	9
Handicapped Access	3	2	1	9
Informational Signs	3	2	1	9
Trail Signs	3	2	1	9
On Site Publications & Info	3	2	1	9
Off Site Promotional Efforts	3	2	1	9

State Facility Managers Survey

Please describe the single most serious concern cited above, giving your suggestions on how it might best be resolved.

---

4. Please rate each of the following on the funding priority it should receive within your agency.

	Priority For Action			
	High	Moderate	Low	NA
Acquire Land	3	2	1	9
Develop New Facilities	3	2	1	9
Renovate Facilities	3	2	1	9
Improve Public Access	3	2	1	9
Improve Handicapped Access	3	2	1	9
Increase/Improve Parking	3	2	1	9
Strengthen Conservation Efforts	3	2	1	9
Expand Passive Recreation	3	2	1	9
Expand Active Recreation	3	2	1	9

5. Please rate the quality of each of the following that are provided at your site(s):

	Very Good				Very Poor	Not Applicable
Parking	5	4	3	2	1	9
Picnic Areas	5	4	3	2	1	9
Campsites	5	4	3	2	1	9
Boat Ramps	5	4	3	2	1	9
Swimming Areas	5	4	3	2	1	9
Hiking Trails	5	4	3	2	1	9
Equestrian Trails	5	4	3	2	1	9
Cross Country Ski Trails	5	4	3	2	1	9
Snowmobile Trails	5	4	3	2	1	9
Multiple Use Trails	5	4	3	2	1	9

6. To what extent do personnel management concerns currently exist at your site(s) in each of the following areas?

	Major Concern	Minor Concern	No Concern
Staff Training & Development	3	2	1
Seasonal Hiring Practices	3	2	1
Staff Morale & Motivation	3	2	1
Pay & Benefits	3	2	1
Career Ladder & Opportunities	3	2	1
Rewarded for Creative Thinking	3	2	1
Involvement in Planning Process	3	2	1
Informed of Policy or Rule Changes	3	2	1
Communication with Other State Agencies	3	2	1
Communication with Central Agency Staff	3	2	1

State Facility Managers Survey

Please describe the single most serious concern cited above, giving your suggestions on how it might best be resolved.

7. Would a volunteer program at your site improve your ability to provide quality services? Please explain.

Definitely Yes Probably Yes Probably No Definitely No

8. To what extent do current state policies create concerns at your site in each of the following areas?

	Major Concern	Minor Concern	No Concern
Policies Restrict Needed Services	3	2	1
Mgt Voice in Developing Policy	3	2	1
Mgt Voice in Developing Regulations	3	2	1
Adequate Resources to Implement Policy	3	2	1
Conflicting or Unrealistic Policies	3	2	1
Coordination With Other Government, Nonprofit & Private Organizations	3	2	1

Please describe the single most serious concern cited above, giving your suggestions on how it might best be resolved.

9. Considering all of the agency needs over the next few years, what should be the top three priorities for funding?

First
Second
Third

10. What are the greatest budget needs at your site(s)?

Capital:
Operating:

11. Are there any ways in which EOEA should change its policies for allocating funds among the divisions of your agency?

12. Is there anything else we should know in order to make it easier for managers to effectively do their job?

SCORP Project
109 Hills North
University of Massachusetts, Amherst
Amherst, MA 01003-0069
Telephone: (413) 545-2255

The 1988 Massachusetts Statewide Comprehensive Outdoor Recreation Plan

A Survey of Massachusetts Communities Regarding the Critical Issues of Outdoor Recreation Resource and Conservation Planning

This survey is being conducted so that we may learn what issues are of importance at the community level and to provide input and direction into the state planning process which will lead to the development of state outdoor recreation and conservation policies. This input is essential for the preparation of the 1988 Massachusetts Statewide Comprehensive Outdoor Recreation Plan. If you wish to comment on any questions or qualify your answer, please feel free to use the space in the margins or the space at the end of the questionnaire. All of your comments will be read and taken into account. Thank you for your help.

First, to provide us with some insight into who responded to this survey, please complete the following. We are mostly concerned with the titles of individuals involved in completing the survey. Please be assured that this information will be kept confidential and the findings will be reported only in summary form.

Your Title: ______________________ Agency/Office: ______________________

Community: ______________________ Zip Code: ______________________

Your Name (*Optional*): ____

Others who participated in the completion of this community survey.

Title: ______________________ Agency/Office: ______________________

Title: ______________________ Agency/Office: ______________________

Title: ______________________ Agency/Office: ______________________

What is the current budget for (a) operating and (b) capital expenditures for recreation and park services; (c) your total community budget and (d) the dates of your current fiscal budget year?

(A) $____________Total Dollar Amount for Recreation/Park Operations

(B) $____________Total Dollar Amount for Recreation/Park Capital Expenditures

(C) $____________Total Dollar Amount for Your Entire Community's Operating and Capital Budget

(D) Starting and Ending Dates of Your Current Fiscal Budget Year: _____, 198__ to _____, 198__ .

BEFORE YOU OPEN AND COMPLETE ANY OF THE OTHER PARTS OF THE SURVEY, please identify your initial opinions of the most critical outdoor recreation and conservation issues facing your community.

1. Please take a moment to think of the three most critical outdoor recreation and conservation issues facing your community during the next five years. Describe briefly, in priority order, those top three issues.

PRIORITY:	*DESCRIPTION:*
1	______________________________
2	______________________________
3	______________________________

2. Listed below are issues regarding outdoor recreation and conservation. Rate the importance of these issues within your community and indicate if the issue is being effectively addressed in your community whether by public or private means.

	EXTREMELY IMPORTANT ISSUE	*IMPORTANT*	*NOT AN ISSUE*	*Is this issue being effectively dealt with?*	
	Please circle response			Please circle response	
A. ACQUISITION AND PROTECTION OF:					
A1. Outdoor Recreation Areas	1	2	3	Yes	No
A2. Conservation Areas	1	2	3	Yes	No
A3. Local Cultural/ Historical Resources	1	2	3	Yes	No
A4. Wetlands	1	2	3	Yes	No
A5. Scenic Quality	1	2	3	Yes	No
A6. Water Supply	1	2	3	Yes	No
A7. Wildlife Habitat	1	2	3	Yes	No
B. DEVELOPMENT/EXPANSION OF:					
B1. Linkages and Trail Corridors Connecting Outdoor Recreation & Conservation Areas	1	2	3	Yes	No
B2. Outdoor Recreation Facilities	1	2	3	Yes	No
B3. Water Based Recreation Facilities	1	2	3	Yes	No
B4. Access to Inland Water Bodies	1	2	3	Yes	No
B5. Recreational Use of Wetlands	1	2	3	Yes	No
B6. Access to Oceanfront Beaches	1	2	3	Yes	No
B7. Handicapped Accessible Outdoor Recreation & Conservation Areas	1	2	3	Yes	No
C. ADDITIONAL PLANNING ISSUES					
C1. Provision of Campgrounds	1	2	3	Yes	No
C2. Recreational Use of Drinking Water Reservoirs	1	2	3	Yes	No
C3. Management of Outdoor Recreation Vehicles	1	2	3	Yes	No
C4. Maintenance of Outdoor Recreation Facilities	1	2	3	Yes	No
C5. Outdoor Recreation Day Care Programs	1	2	3	Yes	No
C6. Liability Insurance Coverage	1	2	3	Yes	No
C7. Other (Please specify): ________________	1	2	3	Yes	No
C8. Other (Please specify): ________________	1	2	3	Yes	No

3. Given your local needs, which of the above issues is the most critical to be addressed ? (*Using the above list, please specify the letter and the number of the issue in the space provided below.*)

_____ MOST CRITICAL ISSUE TO BE ADDRESSED

4. Given the local needs of your local community in regard to outdoor recreation and conservation issues, which of the issues listed in question #2 is the most critical issue that is in greatest need of: (a) funding at the local level, and (b) funding from the state level? (*Again, please specify the letter and the number of the issue in each of the spaces provided below.*)

A. _____ MOST CRITICAL ISSUE IN NEED OF LOCAL FUNDING

B. _____ MOST CRITICAL ISSUE IN NEED OF STATE FUNDING

Next we would like you to focus your attention upon a variety of specific issues with regard to the planning and provision of outdoor recreation and conservation areas.

5. Has the Impact of Proposition 2 1/2 affected the provision, access and programming related to outdoor recreation and conservation resources in your community? (*Please circle the letters of ALL that apply.*)

   A. YES, 2 1/2 caused the elimination of programs and activities
   B. YES, 2 1/2 caused the elimination of areas and facilities
   C. YES, 2 1/2 prevented the acquisition of recreation and conservation areas
   D. YES, 2 1/2 prevented the development of some recreation and conservation programs & activities
   E. YES, 2 1/2 caused the shift of responsibility for the provision of outdoor recreation resources to private agencies
   F. YES, 2 1/2 led to an increased use of fees and charges
   G. NO, 2 1/2 caused no significant problems in these areas for our community

6. Have issues relating to liability insurance protection affected the provision, access and programming of outdoor recreation and conservation resources within your local community? (*Please circle the letters of ALL that apply.*)

   A. YES, liability insurance issues have caused the elimination of some programs and activities
   B. YES, liability insurance issues have caused the elimination of access to some facilities
   C. YES, liability insurance issues have prevented the acquisition of land areas and facilities
   D. YES, liability insurance coverage has prevented the development of some recreation and conservation programs
   E. YES, liability insurance coverage has resulted in a shift of recreation and conservation provision to other agencies -- both non-profit and private
   F. NO, liability insurance issues have not created problems

7. How should the Commonwealth of Massachusetts address liability issues related to the provision of public outdoor recreation and conservation resources within local communities? (*Please circle the letters of ALL that apply.*)

   A. Enact legislation to lower liability insurance coverage rates.
   B. Enact legislation to assure the availability of liability insurance coverage
   C. Enact legislation which restricts liability settlement amounts
   D. Enact legislation to provide a state insurance program which offers comprehensive liability insurance coverage to local communities
   E. Exert pressure on insurance companies without legislation
   F. Provide training to increase safety and reduce liability risk
   G. None of the above

8. Briefly identify any management problems and needs related to trails and trail use in your community.

   MANAGEMENT PROBLEMS:____
   ____
   ____

   MANAGEMENT NEEDS: ____
   ____
   ____

9. Does your community presently provide outdoor recreation programs for children during normal workday hours that are administered by the public recreation and/or park agency that serve as day-care programs ?

A. NO B. YES

10. Are there any sites in your local community that are not accessible to the physically disabled?

A. NO B. YES; If "YES", what is the primary reason?*(Please circle only the letter of the primary reason.)*

A. LACK OF GOVERNMENTAL DIRECTIVE
B. LACK OF LOCAL FUNDS
C. LACK OF STATE/FEDERAL FUNDING
D. LACK OF EXPERTISE IN CONVERSION OF NON-ACCESSIBLE SITES
E. REQUESTS FOR CONVERSION HAVE NOT BEEN MADE BY CITIZENS
F. OTHER: ____________
G. NOT REQUIRED TO DO SO

11. Has your community conducted an inventory of town property in order to comply with Section 504 regarding handicapped accessibility to public outdoor recreation and conservation areas?

A. NO B. YES

Finally, we would like you to answer a few questions about current state policies for planning outdoor recreation and conservation.

12. Do you feel any changes in state policies are needed to enable cities and towns to obtain funding and/or technical assistance for such activities as: a. land acquisition, b. land protection, c. recreation development; and/or d. maintenance of outdoor recreation and conservation areas and resources? (*If changes are necessary, please indicate by responding to each item and stating your recommendation. If you feel "No Changes are Needed", then circle "E."*)

A. LAND ACQUISITION:

Yes, we recommend that: ____

____

____

B. LAND PROTECTION:

Yes, we recommend that: ____

____

____

C. RECREATION DEVELOPMENT:

Yes, we recommend that: ____

____

____

D. MAINTENANCE OPERATIONS:

Yes, we recommend that: ____

____

____

E. NO CHANGES IN STATE POLICIES ARE NEEDED

13. Do you feel the Commonwealth of Massachusetts is doing an adequate job in providing technical assistance and education about state policies and funding opportunities? Do you have any recommendations that would assist the state in providing education and information about state policies and funding opportunities?

A. YES, the state is doing an adequate job.
B. NO, the state is not doing an adequate job.

RECOMMENDATION: We recommend that:____

____

____

____

____

Is there anything else you would like to share with us about your community's outdoor recreation and conservation resources or about this survey in general? If so, please attach your comments, or feel free to give us a call.

Public Information/Education Survey

A Survey of EOEA Agency Public Information Directors

Public Information

Besides standard news releases and public service announcements does your organization have any aggressive marketing programs for public information?

Do you receive requests from the public for information about programs within your agency?

Are you able to respond effectively to these requests with the resources available?

What are the most effective methods your agency has used to promote its programs?

What is your agency budget for public information and education?

How does your agency distribute promotional materials such as brochures?

Public Education

Does your organization have a formal public education program?

Does your program ever cooperate with the school system?

In what capacity?

Informing the Handicapped and Minority Populations

Does your organization actively promote its programs to handicapped and minority populations?

How?

Does your publicity mailing list include organizations of handicapped people? Minority Populations?

Are interpretive services at the sites within your program accessible to people with disabilities? as well as the general public?

Do you offer any cultural or recreational programs directed to minority populations?

Private Sector

Does your organization cooperate with the public sector on any publicity, informational, or educational programs?

Municipal Assistance

Do you receive requests from local governments for technical assistance or information about your programs?

Are you able to respond effectively to these requests?

Are you able to steer requests to the right program?

Do you need to know more about programs in other agencies to properly help the public find their way around government?

Implementation

Are you aware of the policies recommended in the 1983 SCORP that might concern your agency?

Do you find these recommendations useful for formulating goals and objectives?

Did you implement any of these policies recommendations?

Would you like to suggest new goals and objectives for the 1988 SCORP that would affect your agency?

What kinds of resources would you need to pursue the goals you think best for your agency? The policies recommend the 1983 SCORP?

Chapter 3 - Developing and Managing Our Resources

Management and Operations Planning

Obviously, having the funding to manage and operate is a necessity, but many other elements will affect the success of management programs and dictate whether it will be listed as an accomplishment. Land management and facilities operation alternatives are shaped by the physical characteristics of the site, the objectives of the managing agency, and by trends in recreation participation. A well planned management program will ensure efficiency in protecting resources and providing recreational opportunities to the public.

Despite the diversity in size, nature and ownership of open space parcels in the Commonwealth, there are general guidelines which can be followed in management planning. Initially, issues and objectives must be defined, followed by a comprehensive inventory of the property including natural and cultural resources, structures, equipment and personnel. This information can be used as a foundation to identify opportunities and requirements for management and or maintenance. The result should be a workable set of action recommendations to guide management and operations decisions. An outline of the basic elements of a management plan follows:

A Generic Park Management Plan

I. Inventory

A. General description of property
1. Location
2. Land use prior to acquisition
3. Land acquisition - dates and intent
4. Boundary description
5. Acreage
6. Topography and Climate

B. Natural Resources
1. Wildlife
2. Vegetation
3. Water
4. Soils

C. Cultural Resources
1. Archaeological (Historic and Prehistoric) features
2. Landscape Features
3. Architectural Features

D. Existing Facilities Evaluation
1. Buildings
2. Dams, dikes
3. Bridges
4. Trails
5. Roads and parking areas
6. Utilities
7. Signage
8. Handicapped access

E. Existing Recreation Opportunities
    1. Water based
    2. Trails
    3. Hunting
    4. Camping
    5. Playing fields
    6. Interpretive services
    7. Programs for people with disabilities
    8. Minority programs

F. Management Resources
    1. Personnel
    2. Vehicles, tools and other equipment

G. Relationship to Surrounding Communities
    1. Accessibility
    2. Patterns of use
    3. Public opinion

II. Objectives and Goals

A. Statement of Primary Purpose and other Benefits

B. Justification of Purpose
    1. Population (demand)
    2. Projected needs
    3. Decrease in private land
    4. Public input

III. Maintenance

A. Directive and Schedule for all Items Included in, I (B-E)
B. Budget to Maintain all Items Included in, I (B-E)
    1. Contract items
    2. Manpower
    3. Vehicles, tools and other equipment

IV. Recommendations for further Development and Improvement

A. Eliminate Safety Hazards
B. Access Improvements
C. Buildings and Roads
D. Recreation
E. Forestry, Wildlife and Cultural Resource Management
F. Interpretive Services
G. Acquisition
H. Provide for Additional Manpower, Vehicles, Tools and other Equipment Commensurate with Increased Use

V. Periodic Evaluation and Update

A. Implementation of Recommendations
B. New Issues

Management and Operations Resource Directory

The mission of the Management and Operations Subcommittee was to provide Massachusetts cities and towns with technical assistance which will facilitate the acquisition, planning and management of municipal park lands. The following technical assistance directory is provided as a networking tool for municipal officials to draw upon the knowledge of others involved with the protection of natural and cultural resources. The directory consists of a partial listing of nonprofit, public organizations and state and federal agencies which may be able to provide technical assistance. Listings within the directory are organized under the following three major categories: (1) Acquisition, (2) Planning and (3) Management. Multiple service agencies and organizations are listed according to the primary type of service which they provide. Additional technical assistance may be acquired by consulting the list of reference manuals presented at the end of this directory. The method for obtaining each manual is also presented.

Acquisition

Grants

Agricultural Preservation Restriction Program (DFA)	(508) 792-7710 (508) 365-5063
City and Town Commons Program (DEM)	(617) 727-3160
Coastal Facilities Improvement Program (MCZM)	(617) 727-9530
Fund for New England	(617) 451-3670
Fund for the Preservation of Wildlife and NaturalAreas	(617) 722-7456
Heritage State Parks Program (DEM)	(617) 727-3160
Land and Water Conservation Fund (DCS)	(617) 727-1552
MA Preservation Projects Fund (MHC)	(617) 727-8470
Olmstead Historic Landscape Preservation Program (DEM)	(617) 727-3160
Public Access Board (DFWELE)	(617) 727-1843
Reservoir Sites Acquisitions Program (DEM)	(617) 727-3160
Resource Conservation and Development Program (DEM)	(617) 727-3180
Self-Help Program (DCS)	(617) 727-1552
Urban Self-Help Program (DCS)	(617) 727-1552

Land Banks

Nantucket Land Bank Commission	(508) 228-7240

Land Transfers (Land Holding Organizations)

Massachusetts Audubon Society	(617) 259-9500 x725
The Nature Conservancy	(617) 423-2545
The Trust for Public Lands	(617) 742-1340

Land Trusts

Berkshire Natural Resources Council, Inc.	(413) 499-0596
Berkshire County Land Trust	(413) 499-0596
Plymouth County Wildlands Trust	(508) 224-2765
Trustees of Reservations	(508) 921-1944
Essex County Greenbelt Association, Inc.	(508) 768-7241

Land Leasing

MA Department of Fisheries, Wildlife and Environmental Law Enforcement	(617) 727-3151

Planning

Legal Counsel

Attorney General's Office	(617) 727-8400
Conservation Law Foundation of New England, Inc.	(617) 742-2540
Environmental Lobby of Massachusetts	(617) 742-2553
MA Bar Association	
Natural Resources Defense Council in New York	(212) 949-0049
New England Environmental Mediation Center	(508) 283-1153
Massachusetts Association of Conservation Commissions	(617) 381-3457
Sudbury Valley Trustees	(508) 443-6300

Regional Planning Agencies

American Planning Association	(617) 423-7361
Berkshire County Regional Planning Commission	(413) 442-1521
Boston Greenspace Alliance	(617) 426-7980
Boston Redevelopment Authority, Harbor Planning & Development Project	(617) 722-4300
Cape Cod Planning and Economic Development Commission	(508) 362-2511
Center for Rural Massachusetts	(413) 545-2255
Central Massachusetts Regional Planning Commission	(508) 756-7717
Community Resource Development Program (UMass Cooperative Extension)	(413) 545-2049
Franklin County Commission	(413) 774-3167
Historic Survey and Planning Grants (MHC)	(617) 727-8470
Pioneer Valley Planning Commission	(413) 781-6045
MA Federation of Planning and Appeals Boards	(508) 372-2159
Martha's Vineyard Commission	(508) 693-3453
Merrimack Valley Planning Commission	(617) 374-0519
Metropolitan Area Planning Council	(617) 451-2770
Montachuset Regional Planning Commission	(508) 345-7376
Northern Middlesex Area Commission	(508) 454-8021
Old Colony Planning Council	(508) 583-1833
Southeastern Regional Planning and Economic Development District	(508) 824-1367
New England Natural Resource Center	(617) 451-3670

Management

Air Quality

Division of Air Quality Control (DEQE)	(617) 292-5593
DEQE Regional Offices	
Metropolitan Boston\Northeast Regional Office	(617) 935-2160
Southeast Office	(508) 727-1440
Central Office	(508) 792-7650
Western Office	(617) 785-5327

Coastal Zone

Boston Harbor Associates	(617) 426-5025
Buzzards Bay Project (MCZM)	(617) 727-9530
Cape Cod Extension Service	(508) 362-2511
Center for Coastal Studies	(508) 487-3622
Coastal Zone Management Office	(508) 727-9530
Coastweeks	(202) 628-9636
MIT Sea Grant Program	(617) 253-7079

Fisheries

Inland - Division of Fisheries and Wildlife (DFWELE)	(617) 366-4470
Marine - Division of Marine Fisheries (DFWELE)	(617) 727-3193

Floodplain

Army Corps of Engineers	(617) 647-8522
Division of Water Resources (DEM)	(617) 727-3267
Division of Wetlands and Waterways (DEQE)	(617) 292-5518
Dam Safety Program (DEM)	(617) 727-3160

Forestry

Bureau of Forest Development (DEM)	(617) 727-3184
Bureau of Fire Control (DEM)	(617) 727-3184
Bureau of Shade Tree Management and Pest Control(DEM)	(617) 727-3184
MA Forestry Association	(617) 464-2759
New England Forestry Foundation, Inc.	(617) 437-1441

Lakes and Ponds

Clean Lakes Program (DEQE)	(617) 366-9181
MA Congress of Lake and Pond Associations	(617) 892-3121
Water Resources Research Center	(413) 545-2842

Land Use

Association for the Preservation of Cape Cod	(617) 255-4142
Community Resource Development Program	(413) 545-2049
Nonprofit Consulting Collaborative	(617) 267-6161
MA Soil and Water Conservation Districts	
Berkshire Conservation District	(413) 443-1776
Bristol Conservation District	(508) 824-6668
Cape Cod Conservation District	(508) 362-6327
Dukes Conservation District	(508) 693-4680
Essex Conservation District	(508) 744-5578
Franklin Conservation District	(413) 584-1464
Hampden Conservation District	(413) 584-1464
Hampshire Conservation District	(413) 564-1464
Middlesex Conservation District	(617) 263-2291
Nantucket Conservation District	(508) 228-4933
Norfolk County Conservation District	(617) 668-0995
Northeastern Worcester Conservation District	(508) 668-0995
Northwestern Worcester Conservation District	(508) 885-4275
Plymouth County Conservation District	(508) 947-7863
Southern Worcester Conservation District	(508) 885-4275
Suffolk Conservation District	(617) 668-1170

Parks

The Bay Circuit Program (DEM)	(617) 727-3160
Essex County Greenbelt Association	(508) 768-7241
Division of Forest and Parks,	
Bureau of Recreation (DEM)	(617) 727-3180
Rinks and Pools (DEM)	(617) 727-3180
Handicapped Access	
Office of Handicapped Affairs (Voice and TDD)	(800) 322-2020 (617) 727-7440
Public Education	
Office of Interpretive Services (DEM)	(617) 727-3180
MA Environmental Education Society	(617) 347-5409
MA Recreation and Parks Association	
Landscaping	
Boston Urban Gardners	(617) 423-7497
National Parks and Conservation Association	(202) 944-8569
Personnel	
Environmental Intern Program	(617) 426-4783
Public Access Board (DFWELE)	(617) 727-1843
Student Conservation Association	(603) 826-5206
Trails	
Appalachian Mountain Club	(617) 523-0636
Appalachian Trail Conference	(802) 649-2816
Rails-to-Trails Conservancy	(202) 797-5400
Urban Forest and Parks Bureau of Urban Services (DEM)	(617) 727-3180
Heritage State Parks (DEM)	(617) 727-3160
Division of Reservations and Interpretive Services (MDC)	(617) 727-5215

Vandalism Control	
Division of Environmental Law Enforcement (DFWELE)	(617) 727-3190
Complaints (DFWELE)	(800) 632-8075

River Basins

Riverways Program (DFWELE)	(617) 727-6278
Rivers Program (DEM)	(617) 727-3160
New England Rivers Center	(617) 742-4134
Division of Waterways (DEM)	(617) 727-3188
River Basin Planning Program (DEQE)	(617) 727-0437
Division of Water Resources (DEM)	(617) 727-3267

Soil Conservation (refer to Land Use)

Water Supply

Division of Water Supply (DEM)	(617) 292-5770
Water Supply Citizens Advisory Committee	(413) 586-8861
Rural Community Assistance Program	(617) 297-1376
Division of Watershed Management (MDC)	(617) 727-6267

Waste

Solid	
Division of Solid Waste (DEQE)	(617) 292-5961
Earthworm, Inc.	(617) 426-7344
Hazardous	
Clean Water Action Project	(617) 423-4661
Division of Hazardous Waste (DEQE)	(617) 292-5589
Office of Safe Waste Management (DEM)	(617) 727-3260
MA Toxics Network	(617) 731-1341

Watershed

Blackstone River Watershed Association	(508) 753-2157
Charles River Watershed Association	(508) 965-5975
Citizens for Watershed Reservation	(508) 585-4533
Connecticut River Watershed Council	(413) 584-0057
Housatonic River Watershed Association, Inc.	(413) 442-5579
Ipswich River Watershed Association, Inc.	(508) 774-8927
Lake Cochitutate Watershed Association	(508) 655-5831
Merrimack River Watershed Council	(508) 363-5777
Millers River Watershed Council	(413) 659-3497
Mystic River Watershed Association	(617) 643-2157
Nashua River Watershed Association	(508) 342-3506
Neponset Conservation Association	
Neponset River Watershed Association	(508) 784-6188
North & South Rivers Watershed Association	(508) 659-7133
Quaboag River Watershed Association	(413) 267-5480
Scantic River Watershed Association	(203) 528-8366
Shawsheen Watershed Environmental Action Team	(508) 851-8931
Slocums River Association	(617) 542-9500

Watershed (cont'd.)

Su-As-Co Watershed Association	(508) 396-6878
Taunton River Watershed Council	(508) 822-6963
Traphole Brook Protection Association, Inc.	(508) 494-0202
Truro Conservation Trust	(508) 487-0167
Westfield River Watershed Association	(413) 562-3657
Westport River Defense Fund	(508) 636-3016

Wetlands

Division of Wetlands and Waterways (DEQE)	(617) 292-5518
MA Association of Conservation Commissions, Inc.	(617) 381-3457
MA Society of Municipal Conservation Professionals	(617) 381-3457

WILDLIFE

Division of Fisheries and Wildlife (DFWELE)	(617) 727-3151
Natural Heritage and Endangered Species Program (DFWELE)	(617) 727-9194
MA Wildlife Federation	(617) 369-3118
National Wildlife Federation	(802) 456-8985
U.S. Fish and Wildlife Service (Regional Headquarters)	(617) 965-5100
Parker River National Wildlife Refuge	(617) 465-5753
Great Meadows National Wildlife Refuge	(617) 443-4661

Directory of References

1. Citizens Guide to Sources for Marine and Coastal Information in Massachusetts MIT Sea Grant Information Center MITSG 86-6	(617) 253-5944
2. Department of Environmental Management Program Directory	(617) 727-3188
3. Directory of Environmental Groups in New England U.S. EPA, Office of Public Affairs	(617) 223-7223
4. Directory of State, Federal and Regional Water Planning & Management Agencies, Division of Water Resources (DEM)	(617) 727-3267
5. New England Environmental Organization Directory New England Environmental Network	(617) 381-3451

Technical Assistance Reference Manuals

1. Park Maintenance Standards. 1986.
   The American Park & Recreation Society and
   The National Society for Park Resources (branches
   of the National Parks and Recreation Association)
   3101 Park Center Dr.
   Alexandria, Virginia 22302

2. Recreation, Park and Open Space Standards and Guidelines. 1986.
   National Parks & Recreation Association
   3101 Park Center Dr.
   Alexandria, Virginia 22302

3. The Feasibility Study Process For Parks and Recreation. 1986.
   The American Alliance for Health, Physical Education
   Recreation and Dance
   1900 Association Drive
   Reston, VA. 22091

4. Public Policy Model For Fees and Charges. 1981. Sondra Dirsch.

5. Public Swimming Pool Management, A Manual on Sanitation, Filtration and Disinfection. 1985.

6. Revenue Sources Management in Parks and Recreation. 1974. Thomas Hines.

7. Cleaning Recreation Sites. 1982. NRPA, NSPR and USDA.

8. Design for Maintenance. 1982. Park Maintenance Standards committee of the NSPR.

9. Effective Utilization of Abandoned Railroad Rights-of-Way For Park/Recreation Purposes. 1977.
   John S. Blair and B. Tindall.

10. Land Acquisition. 1975. Warren Dershow.

11. Park Planning and Design: An Evaluation Approach. David Reed and Richard Perdue.

12. Park Planning Guidelines Revised. 1981. George Fogg.

13. A Site Design Process. 1986. George Fogg.

14. Uniform Federal Accessibility Standards. 1984.

15. The Budget Process. 1986.
    The American Alliance for Health, Physical Education,
    Recreation and Dance
    1900 Association Drive
    Reston, VA. 22091

16. Energy Manual For Parks. 1976. 2nd Edition.

17. Evaluation and Self Study of Public Recreation and Parks Agencies. 1972. Betty Vander Smissen.

18. Management Planning For Park and Recreation Areas. 1982. George Fogg.

19. Microcomputers in Park and Recreation Agencies. 1985. Ralph Thayer.

20. National Personnel Guidelines for Park, Recreation Leisure Services Positions. 1978.NRPA

21. Guidelines for Operations and Land Stewardship. Division of Planning and Development (DEM) (617) 727-3160

22. Natural Resource Management Guide For the State of Massachusetts.Farmers Home Loan Association (413) 252-3471

Note: References #4-14 can be obtained from the Publications Division, National Recreation and Park Association, 3101 Park Center Drive, Alexandria, VA 22302.

Access For People With Disabilities

People with disabilities, like all people, engage in a wide variety of outdoor recreation activities. The survey conducted to assess public demand for outdoor recreation illustrates the range of activities from swimming to camping, from gardening and sightseeing to karate and skiing. Making facilities accessible so that people can pursue their diverse interests is a high priority for the Executive Office of Environmental Affairs and an area on which the SCORP Technical Advisory Committee has focused. Volume I of the 1988-92 SCORP makes recommendations for improving accessibility in the out-of-doors. Volume II encourages the planner and the service provider to go beyond basic access needs, pursuing a continual effort for total access.

Access to public facilities, programs and services is both a state and federal mandate. All new construction and renovation of public facilities since 1968 is required to be accessible to people with disabilities. Additionally, Amendment Article 114 of the Massachusetts Constitution reads: "No otherwise qualified handicapped individual shall, solely by reason of his handicap, be excluded from participation in, denied the benefits of, or be subject to discrimination under any program or activity within the Commonwealth." Section 504 of the federal Rehabilitation Act of 1973 states the same non-discrimination for any program or activity receiving federal assistance. Executive Order 246 requires affirmative action of all Executive Offices in the elimination of discriminatory barriers. The laws are clear, it is up to the agencies to implement them and make access a reality.

Swimming, walking and picnicking are the top three summer activities reported in the recent demand survey of people with disabilities. The following guidelines illustrate ways to increase access to these three activities. The state Architectural Access Board's regulations do not yet provide all the details and standards necessary to design outdoor recreation areas. Therefore examples from "A Guide to Designing Accessible Outdoor Recreation Facilities" are included here. This guide was published in 1980 by the Heritage Conservation and Recreation Service, U.S. Department of Interior's Lake Central Regional Office. It is on file at the statehouse library in Boston. Please note that all buildings and facilities (parking lots, drinking fountains, restrooms, shower rooms, etc.) that are new construction or renovation, must be in compliance with the regulations of the Architectural Access Board (521 CMR).

Swimming Pools

A truly accessible and usable pool encourages each of us to have fun and participate to the best of our ability. Design considerations such as ramps, handrails, and textured surfaces can be easily incorporated into the modification of older pools and the design of new facilities. The state AAB regulations allow access by means of any of the following:

- A thirty-four (34) inch wide ramp with a non-slip surface extending into the shallow end of the pool. Such ramps shall have a slope not exceeding one-in-six (1:6), and shall have handrails on both sides, or;

- A lifting device, or;

- When the water level of the pool is above the level of the path of travel, which forms a raised coping, the coping may be utilized as a transfer area, if it is constructed eighteen (18) inches above the path of travel and is eighteen (18) inches wide minimum.

- There shall be an unobstructed path of travel not less than forty-eight (48) inches wide around such pools. These paths shall have a surface that is non-slip.

Although the state regulations do not require steps, it is a good idea to give people the option of entering from a ramp with handrails or from wide steps where they can also sit and relax.

(Source: State AAB Regulations)

Swimming Beaches

The sandy beaches that make swimming and sunbathing so popular prevent some of us from reaching the water. Soft, unstable sand impedes anyone with mobility problems. Therefore, good access to a beach site requires consideration of three separate areas:

Zone 1: Pathway from parking/bathhouse/concession to the beach

- Requires a firm stable path such as concrete, asphalt or wood plank 4' to 5' wide. Handrails, 36" high will assist path users but it may restrict the movement of maintenance vehicles.

(See Figure 1, p. 188, diagram of pathway to beach.)

Zone 2: Pathway from beach to water

- Stabilized sand or wood plank minimizes impact to beach while still providing good access.
- A wooden boardwalk built in sections can be used seasonally on beaches with severe winter ice problems.
- Repair and maintenance of the boardwalk is usually limited to periodically scraping algae and sand from the path and removing hand-railings before winter.
- Handrails may obstruct view or movement across beach and should be used with discretion.

- Although this traditional approach to providing access to beach areas is still an option, the latest innovation is the development of the beachring mat. Shifting sand dunes and high tide have made ramp building and maintenance a major challenge for park supervisors.

- The beachring mats offer a portable, lightweight, low cost alternative to permanent facilities. At the time of publication we are only aware of one company that offers this product. For more information contact: Beachrings, Inc., 1-800-428-1333.

Zone 3: Entering the water

- Provide handrails 36" high and sloped curb along edge of platform to gently stop wheelchairs.
- The hand railing gives added assurance to people in the water or on the platform and serves as a grab bar for beginning swimmers.
- A rubber mat (laid directly on the sand) can also improve access to the water. Although it offers the swimmer less support than the platform, it is less subject to water erosion or displacement by waves.

(See Figure 2, p. 188, diagram of swimming platform)

(Source: A Guide To Designing Accessible Outdoor Recreation Facilities, U.S. Department of the Interior, Lake Central Region, Ann Arbor, Michigan, 1980)

Trails

Our recreation areas contain a wide variety of pathways and trails. Paths are the primary means for travel between activity areas and should be safe, accessible and convenient. On the other hand, trails which are themselves the recreation activity (such as hiking, biking, and nature trails) can be designed to meet a variety of needs and interests.

Provision of recreation trails, like all recreation facilities, should reflect the range of people's preferences and abilities. A classification system designed to provide such a spectrum can be used by recreation planners and managers during initial park design or later reassessment of facilities. The following illustrates one such model system in which trails are rated Class 1 through 5 based on criteria of width, slope, surface preparation, cross slope, and trail edge. Benefits to both users and providers of such a system include:

- encouraging individual choice of a trail based on the degree of difficulty one can expect to encounter;
- eliminating stigmatizing labels, i.e., senior citizens/handicapped trail; and
- providing an easy framework for inventory of the total system of recreational trails offered.

This type of classification system can be a very flexible planning tool. Decisions on the number of trails to be provided, the type of trails most urgently needed, and the manner in which the trail system is communicated to users, rest with the site planners, managers, and community advisors. The spectrum framework merely makes it possible for you to plan for a large constituency with varied needs and abilities.

Trail Surfaces

In large part, the surface of a trail determines its accessibility. Balancing topography with the need to provide a wide range of trail accessibility, one can choose from a variety of trail surfaces. In order of decreasing accessibility, possible choices include concrete; asphalt; wooden planking (over wet, fragile or sandy areas); solidly-packed, fine crushed rock; well-compacted pea gravel; bound wood chips; coarse gravel; rock; unbound woodchips; sand. By using surfaces in combination with other features such as slope, trail width, and rest areas, recreation providers can satisfy a large and extremely varied constituency.

The following trail planning system is one example of a framework that can be used to design a full spectrum of opportunities for hiking. In this way, you can satisfy a wide range of interests and capabilities. Since there are no fixed categories, the following examples of trail classifications are only one way in which the system can be interpreted.

Class I

- Length of trail: 0-1/4 mile
- Rest areas: Benches, shelters or interpretations every 100' to 150'
- Width of trail: 4' (oneway) or 6' (two ways)
- Shoulder of trail: Grass strip, 18" wide, with slight slope toward the trail
- Lineal slope: 1:50
- Cross Slope: None
- Trail surface: Concrete or asphalt
- Trail edge: Use curbs or rails, 3' high, where needed for safety or comfort

Class II

- Length of trail: 1/4 - 1 mile
- Rest areas: Benches, shelters or interpretations every 200' - 300'
- Width of trail: 3' - 4' (oneway) or 4' - 5' (two ways)
- Shoulder of trail: Clear understory brush to 1' from trail, gradual slope in either direction
- Lineal slope: 1:20 with 5' level spaces at 100' intervals
- Cross slope: 1:50 for a maximum of 50'
- Trail surface: Asphalt, wooden plank or finely crushed rock
- Trail edge: Use rails, 3' high, for resting and safety

Class III

- Length of trail: 1-3 miles
- Rest areas: Natural benches occasionally, interpretation where needed
- Width of trail: 3' - 4'
- Shoulder of trail: Clear understory brush to 1' from trail, no abrupt drop-offs adjacent to trail
- Lineal slope: 1:12 with 5' level spaces at 30' intervals
- Cross slope: 1:25 for no more that 50'
- Trail surface: Firm, well compacted, pea sized gravel
- Trail edge: Compacted earth level with trail, Rails at steep grade

Class IV

- Length of trail: 3 - 10 miles
- Rest areas: Rest area or interpretation every mile
- Width of trail: 2' - 3'
- Shoulder of trail: Clear understory brush to 1' from trail
- Lineal slope: 1:8 with occasional level space
- Cross slope: 1:20
- Trail surface: Bound wood chips or gravel mixture
- Trail edge: Texture change with immediate drop to natural terrain from trail edge; rails at hazards areas

Class V

- Length of trail: Over 10 miles
- Rest areas: None unless extremely unique interpretation
- Width of trail: Undefined
- Shoulder of trail: Undefined
- Lineal slope: Use steps if necessary otherwise leave unaltered Cross slope: Undefined
- Trail surface: Sandy, rough-bound woodchips or rocks
- Trail edge: Unaltered

Picnicking

One of the most popular outdoor recreation activities in the United States, picnicking brings families and friends together for feasts and socializing. The diversity of people's needs and interests is reflected in the types of picnic areas they seek. Some groups prefer to picnic in relative isolation and others in clustered groups; some choose proximity to parking lots and service facilities while others opt for more rugged surroundings. Well designed picnic areas provide for the widest range of preferences and options possible. Some picnic sites and the paths leading to them should be firm and level. With forethought, the furniture and structures on the site can be designed and located for total accessibility.

Tables and Benches

- Accessible tables should be located on level sites adjacent to a firm, stable surfaced path
- Extend the ends of the table 18" to 25" from the table legs to provide an unobstructed space for chairs
- Allow clearance between ground and underside of table top so that wheelchair armrests can slide underneath; the average armrest height is 30"
- Provide a clear lateral space, at least 30" wide, beneath the table to accommodate average width of a wheelchair

(See Figure 3, p. 189, diagram of picnic table and wheelchair user)

- Include a space beside bench for wheelchair or stroller (about 30" wide for average wheelchair)
- Seating areas should be located adjacent to (but not obstructing) pathways and developed trails, particularly along inclines
- Texture change in walkways adjacent to seating areas will cue the blind to location of the benches
- Benches that contrast in color from surroundings are more easily distinguished by visually impaired people
- Back and arm rests provide comfort and assistance for people who have difficulty standing or sitting

(See Figure 4, p. 189, diagram of bench with wheelchair beside it)

Grills and Water

- Height of cooking surface should accommodate both seated and standing people

(See Figure 5, p. 190, diagram of grill and wheelchair user)

- Some grills and fireplaces should be accessible by a firm level path
- Grill handles should be easy to grip and should not conduct heat;the front of the grill should be flush with the front of the fireplace
- Hand levers are easier to operate than buttons or knobs

(See Figure 6, p. 190, diagram of dual fountain)

- Fountains and faucets should be accessible by firm level paths and should not protrude into pathways
- In order to accommodate the reach of the average wheelchair user, faucets should be 3'- 0" to 3' - 4' high
- Openings in drains should not exceed 1/2"
- Dual fountains accommodate children and people in wheelchairs as well as standing adults
- Lower fountains accommodate children and people in wheelchairs
- The spout of lower fountain should be no more than 36" high with a 27" clearance underneath
- Keep in mind that many people with disabilities require water frequently

(Source: A Guide To Designing Accessible Outdoor Recreation Facilities, U.S. Department of the Interior, Lake Central Region, Ann Arbor, Michigan, 1980.) This publication also includes information on: camping, amphitheaters, docks and piers, playgrounds, historic sites, and signage.

Figure 1

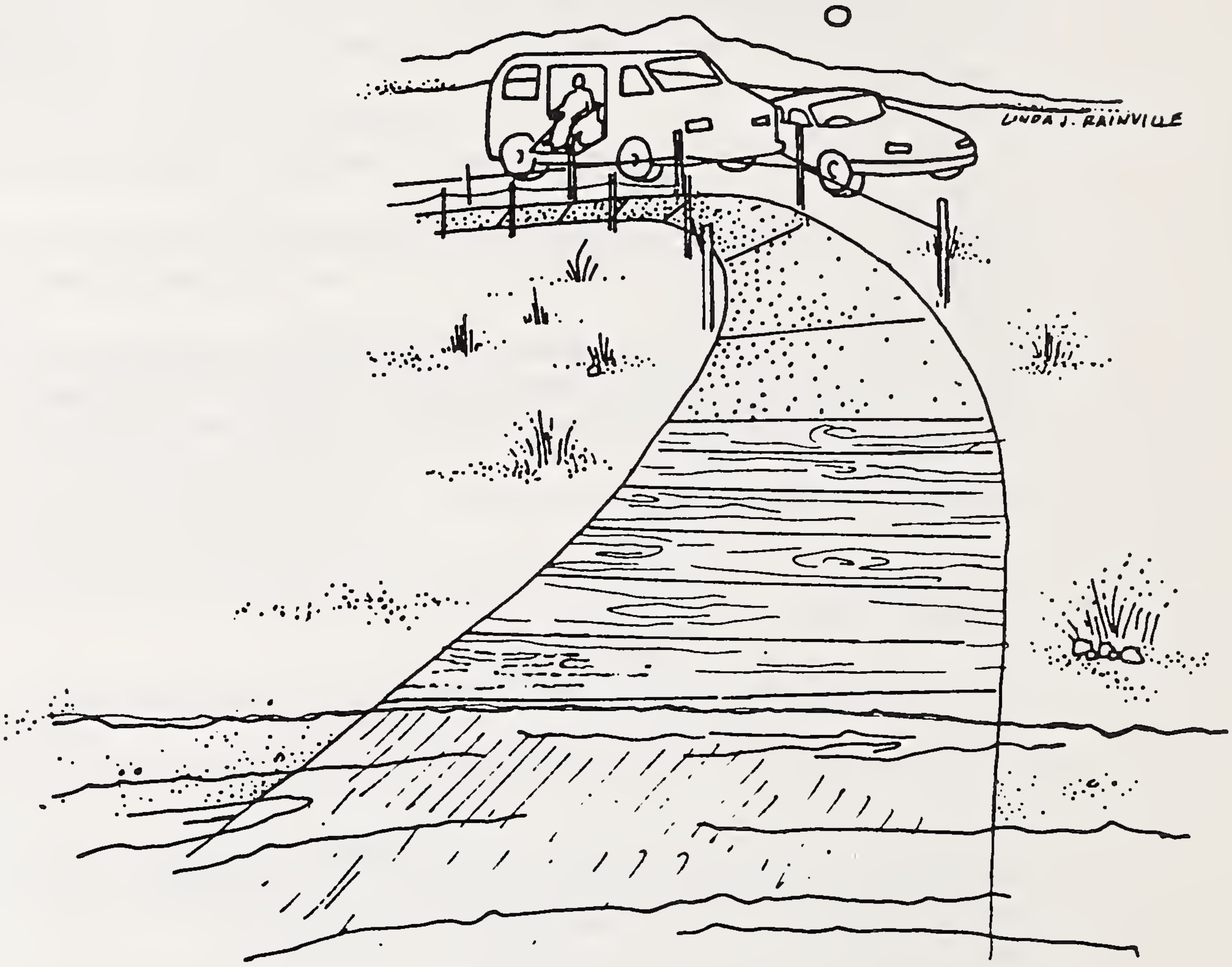


Figure 2

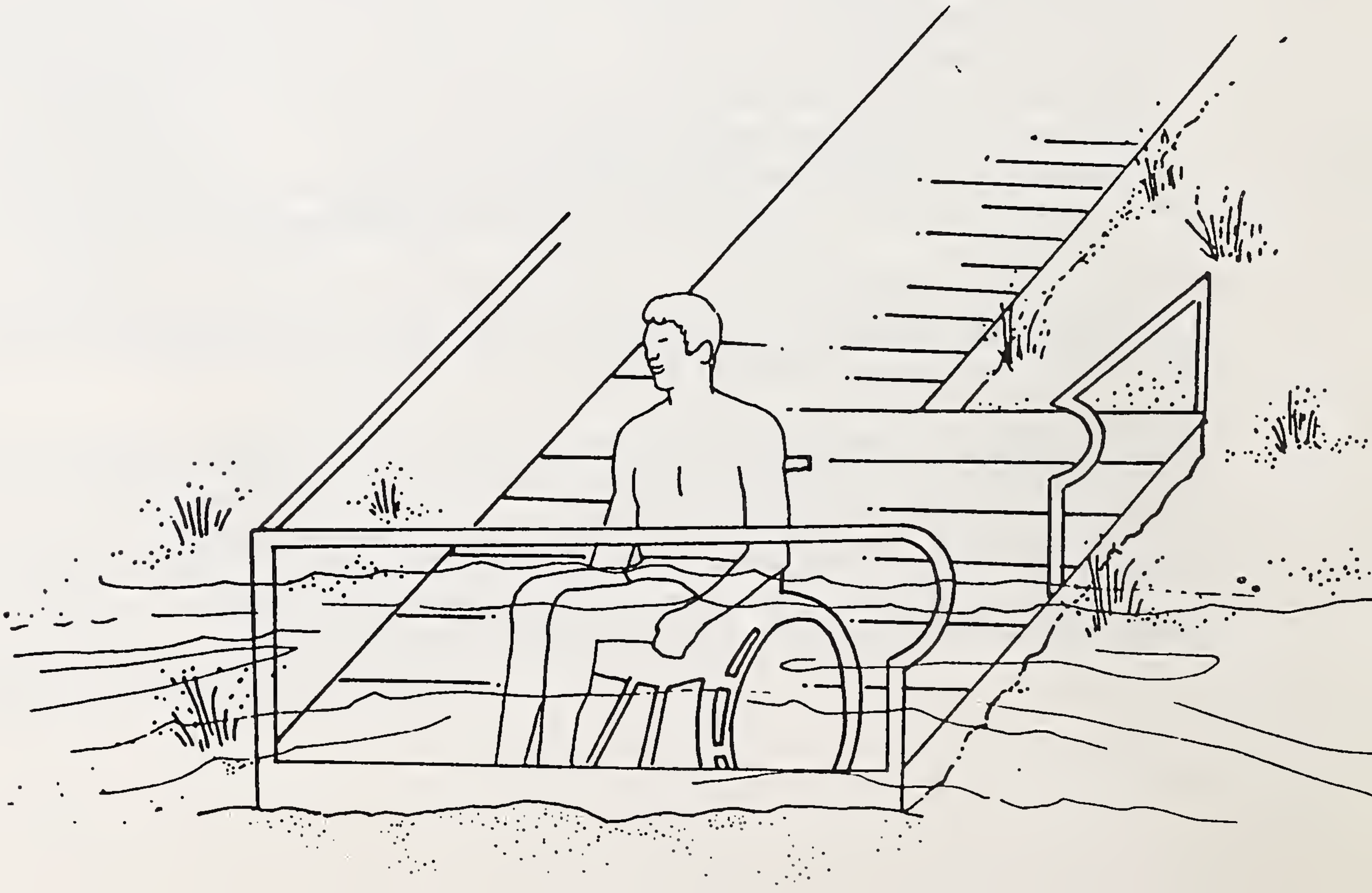
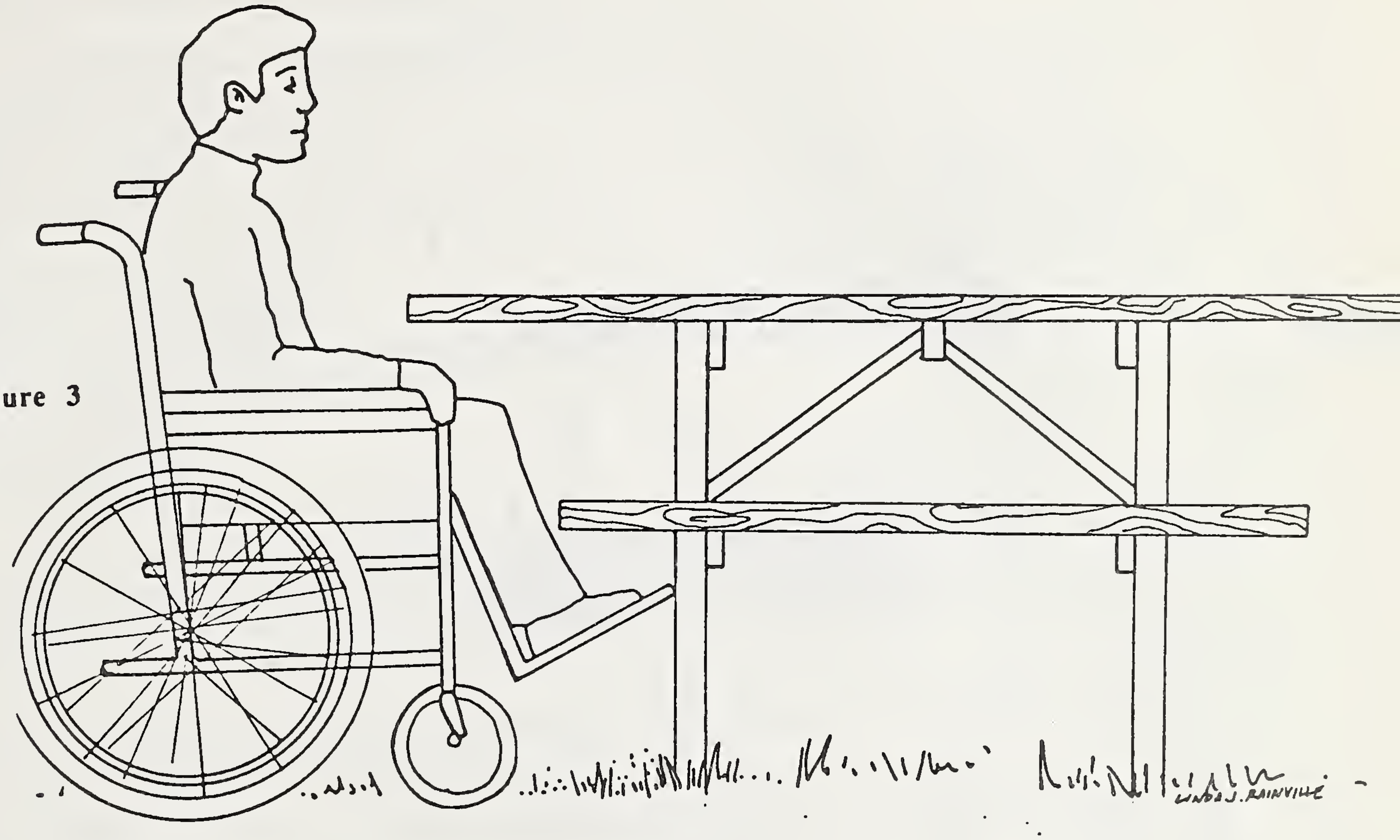


Figure 3



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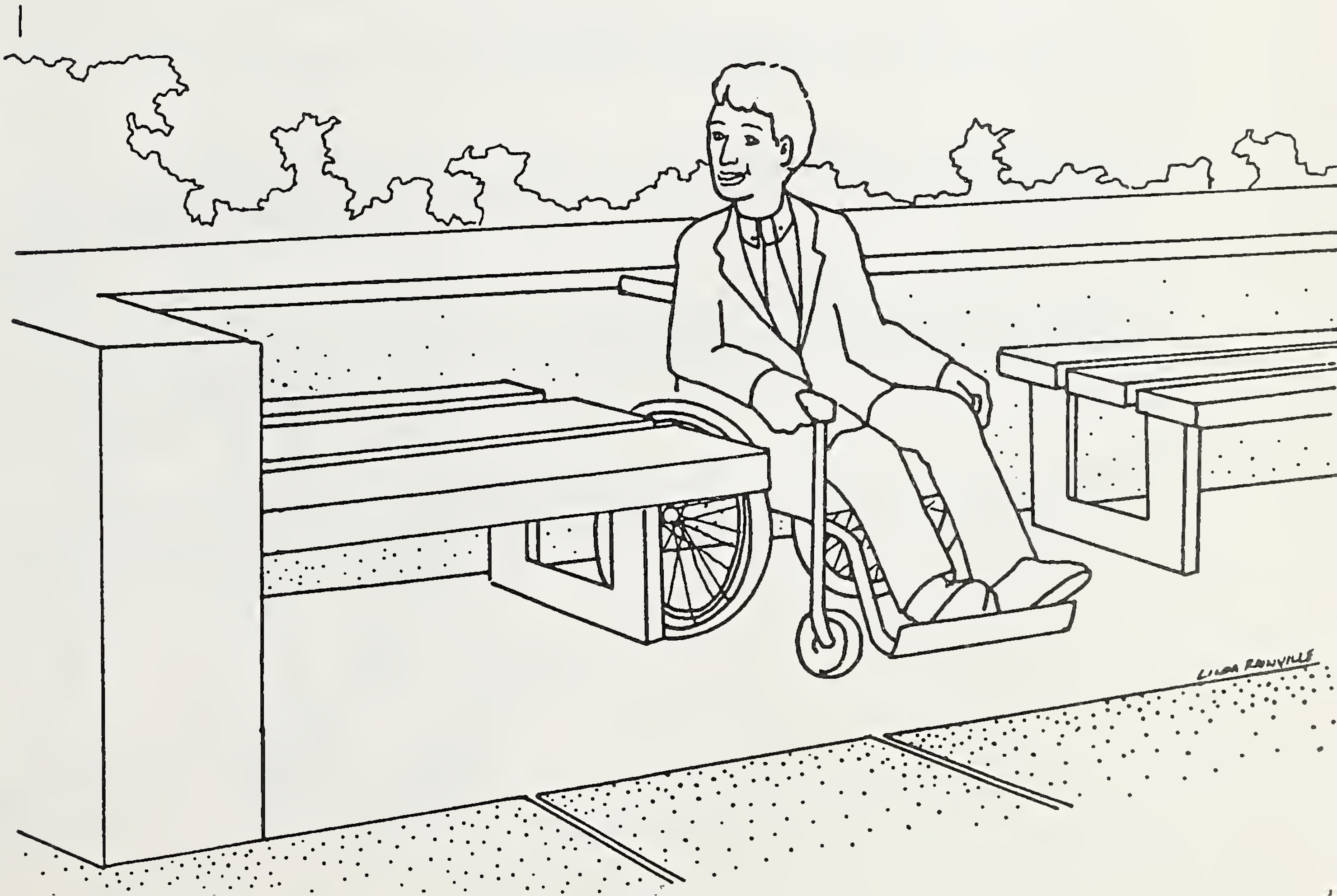


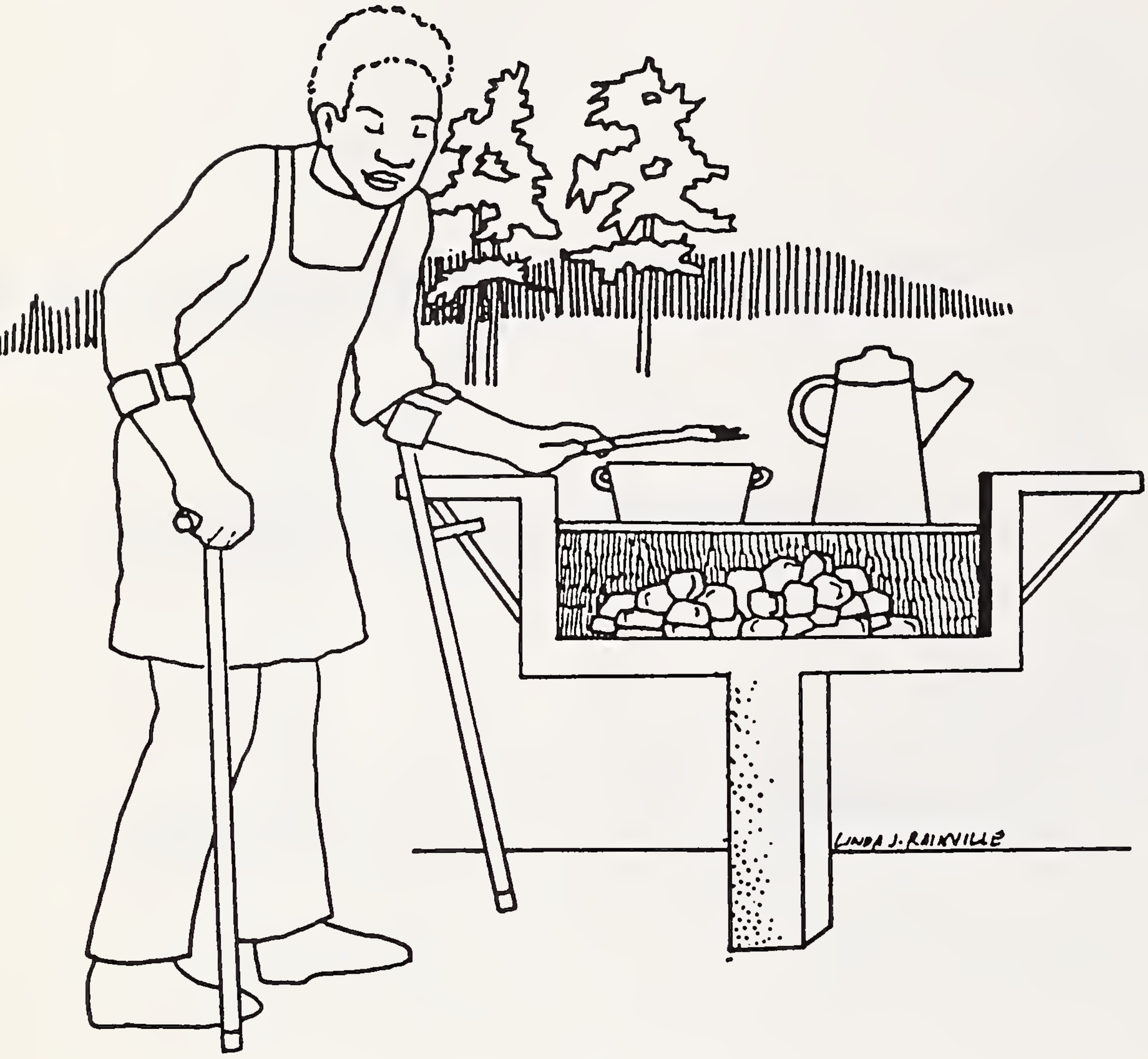
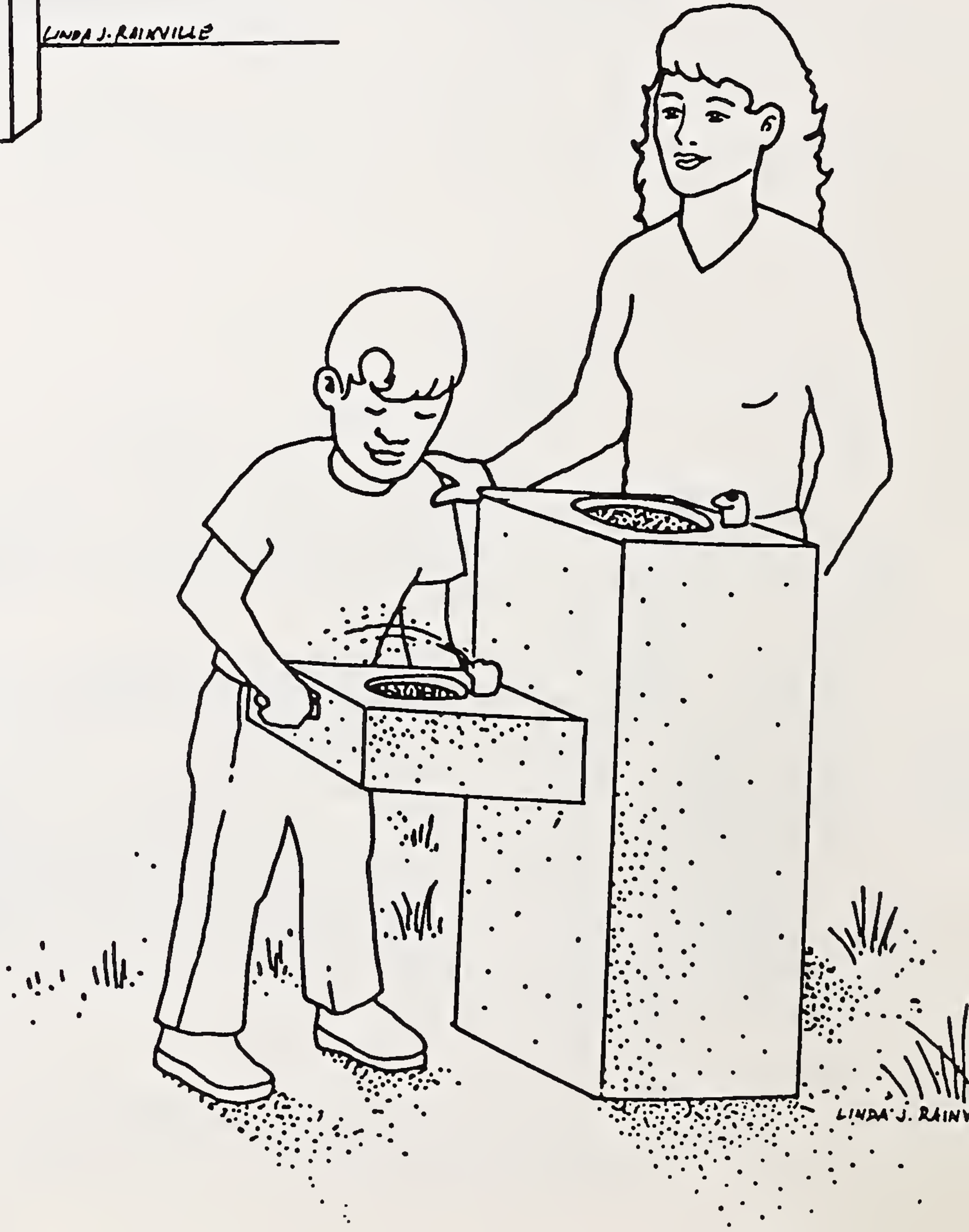


Figure 5

Figure 6



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Architectural Access Board
One Ashburton Place, Room 1310
Boston, MA 02108
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Division of Capital Planning and Operations
Executive Office for Administration and Finance
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One Ashburton Place
Boston, MA 02108

Describes a range of site and building modifications that can be made to your facility to solve accessibility problems including: parking, pathways and curb cuts, ramps, lifts, stairs/steps, doorways, corridors, elevators, telephones, drinking fountains, alarm systems and controls, signage, toilet rooms, and Bathing facilities.

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